12-2010

Multilevel Antecedents of Economic Stress

Mark Zajack
Clemson University, zajack@clemson.edu

MULTILEVEL ANTECEDENTS OF ECONOMIC STRESS

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Industrial-Organizational Psychology

---

by
Mark David Zajack
December 2010

Accepted by:
Robert R. Sinclair, Committee Chair
D. DeWayne Moore
Fred S. Switzer III
James A. McCubbin

ABSTRACT

Much of the literature on economic stress focuses on outcomes. This study assessed the antecedents that precede employee perceptions of economic strain. A multilevel framework of economic antecedents was proposed. The framework included objective indicators of the macroeconomic context as well as individual-level objective and subjective economic antecedents. It was hypothesized that antecedents within each of these categories of economic stress can fall into one of two dimensions: employment- or finance-related. Indicators of the macroeconomic context were gathered from the American Community Survey (ACS). Over 2,000 union employees of a large U.S. Midwestern retail chain provided individual employee-level economic information and economic stress perceptions. A confirmatory factor analysis examined the fit of the hypothesized framework of economic antecedents. Distinct employment- and finance-related factors were found at both the macroeconomic and individual level. The individual-level economic antecedent factors were found to be predictive of individual economic stress perceptions. Individual employment-related factor, finance-related factor, and subjective ratings of job insecurity were related to all three dimensions of economic stress: financial strain, income inadequacy for wants, and income inadequacy for needs. No relationship between the macroeconomic factors and economic stress perceptions was found. Implications of the findings and future directions for research are discussed.

DEDICATION

For Lorna Mary.

ACKNOWLEDGMENTS

I am indebted to Dr. James Martin of Wayne State University for taking an interest in this research and by generously incorporating this study into his ongoing research program with union employees.

Thank you to each of my committee members. In addition to the countless things they have taught me, in particular, I'd like to thank Dr. McCubbin for his enlightening and boundary-spanning perspective on occupational health psychology; Dr. Switzer for making motivation and judgment and decision-making research come to life; and to Dr. Moore for both his seemingly bottomless reservoir of statistical knowledge and his knowing chuckle when my eagerness and confidence combined to take me completely off the rails.

Finally, thank you to my advisor, Dr. Robert Sinclair, for his insight, guidance, and support with this project from start to finish. With all that he does, I do not know how he had time to provide such timely and helpful feedback throughout the process, but I am extremely grateful.

TABLE OF CONTENTS

Page

Table of Contents (Continued)

Page

LIST OF TABLES

List of Tables (Continued)

Table Page

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

> There is still today a frontier that remains unconquered—an America unclaimed. This is the great, the nationwide frontier of insecurity, of human want and fear. This is the frontier—the America—we have set ourselves to reclaim.
>
> *-Franklin Delano Roosevelt, in a 1938 address on the third anniversary of the Social Security Act.*

The difficult economic conditions facing workers today can have significant detrimental effects on the well-being of employees. In the wake of the subprime mortgage crisis, subsequent financial meltdown in late 2008, and historic levels of job loss, there are harsh economic realities currently confronting employees. By the end of 2009, more than 1-in-6 U.S. workers were categorized as unemployed or underemployed according to the U.S. Bureau of Labor Statistics. Despite optimism regarding a recovery in 2010, objective measures provide a gloomier forecast. As of May 2010, one in every five American males between the ages of 25-54 is not working (Wessel, May 6, 2010). Even with an economic recovery in the coming years, long-term projections envision that many of the jobs lost in this recession will not return. Lawrence Summers, economic advisor to President Obama predicted, "When the economy recovers five years from now one in six men who 25 to 54 will not be working" (Wessel, p. 11). Thus, the passage of time alone is an insufficient remedy for this problem.

Economic conditions affect individuals beyond those currently unemployed or underemployed. These difficult conditions put economic pressure on families of the unemployed as well as the employed, who worry about their long-term prospects. Economic stressors can have detrimental effects on the health and well-being of millions. The field of occupational

health psychology can help to quantify the effects of the economic context on the well-being of individual employees.

The purpose of this study is to shed light on the antecedents of economic stress faced by employees. Over the past twenty years, researchers have constructed a comprehensive theoretical framework of antecedents of economic stress (Voydanoff, 1987; 1990; Probst, 2005; Sinclair, Sears, Probst, & Zajack, 2010). Most studies of economic stress focus on stress-related employee outcomes rather than on the antecedents of stress. Clearly the downstream effects of economic stress are important. However, in order to take a preventative approach to economic stress and solve the health-related problems identified by previous research, the precursors of economic stress must be better understood.

Past studies of antecedents of economic stress have focused primarily on two types of stressors: employment-related and income-related (Voydanoff, 1990). Occupational Health Psychology (OHP) researchers have documented the ill effects of employment-related stressors, such as job insecurity, unemployment, and underemployment on employee well-being (Probst, 2005). Other employment-related stressors (e.g., lack of health benefits) have received less attention in the literature. Rarely do OHP studies incorporate income-related antecedents into models of stress. The study of income-related stressors is relatively fragmented with a limited number of studies examining OHP relevant outcomes (Sinclair et al., 2010). Moreover, studies exploring objective stressors such as, household income, financial resources, debt-to-asset ratios, marital status, and family size rarely do so in tandem with employment-related stressors.

The purpose of this study includes an exploration of the relationship between macroeconomic-level antecedents and individual-level perceptions of economic stress. A broad framework for the study of economic stress should encompass the measurement of antecedents at

multiple levels (Sinclair et al., 2010). Considering both employment-related and financial-related antecedents at the individual and macroeconomic level may provide insight into the impact of the state of the local economic on individual perceptions of economic stress.

The conditions associated with the current recession are likely to threaten individuals with a potential loss of resources. In accordance with conservation of resources theory (COR; Hobfoll, 2001), stress may be viewed as a result of perceived threats to one's resources. Measures of local economic conditions, as well as individual-level employment and financial indictors may be related to perceptions of threat to resources and, in turn, perceptions of economic stress. The effects of macroeconomic conditions in tandem with measures of an individual's current employment and financial situation were studied with regard to the prediction of economic stress.

Defining Economic Stress

> Among the array of chronic stressors that people may confront in their daily lives, there is probably none more pivotal than economic hardships and strains (Kahn & Pearlin, 2006, p. 18).

In this paper, economic stress is defined as an umbrella term, encompassing many of the related conceptualizations developed by previous researchers. Most models of occupational stress emphasize the stressor—strain relationship (Hart & Cooper, 2002). Worry in response to a stressor is a type of disturbance which would constitute psychological strain (Glazer & Beehr, 2005). The broadest conceptualization of economic stress is the extent to which individuals believe they do not possess the resources to deal with economic stressors they are currently faced with (Hobfoll, 2001). Thus, economic stress can be generally described as experiencing strain in response to economic demands (Elder & Caspi, 1988).

Voydanoff (1990) described distinct aspects of economic stress or stressor types. The categories described the source of economic stress as objective or subjective as well as employment- or income-related. Of these four categories of economic stressors (which will be reviewed in more depth later), one category stands out as an important category for the definition of economic stress. The subjective aspect of an individual's income-related economic stress was termed, "economic strain." Voydanoff, in defining this aspect of economic stress as a measurement of strain, reflects that the subjective cognitive and affective perceptions regarding the adequacy of one's income to meet financial needs are of primary importance in measuring economic strain. It is the other components of the framework, the categories of stressors that are antecedents to the individual perception of economic strain. This is an important distinction because in this study of economic stress the antecedents of individual economic strain are the primary focus. To quantify the effects of economic antecedents on stress, the relationship between stressors and individual perceptions of economic strain must be assessed.

Many researchers have settled on the same term, economic strain, to describe subjective measures of perceived income inadequacy, financial, or economic strain (e.g., Conger et al., 1990; Hoard & Anderson, 2004; Lyons, 2004; Pearlin, Menaghan, Lieberman, & Mullan, 1981; Simons, Lorenz, Conger, & Wu, 1992). Other researchers have described constructs similar to economic strain using different terminology, including: financial strain (e.g., Jackson & Warr, 1984; Whelan, 1992), perceived financial strain (e.g., McKee-Ryan, Song, Wanberg, & Kinicki, 2005) or generally, economic stress (e.g., Olivius, et al., 2004; Shek, 2005). In the popular press many of these terms are used interchangeably as well. For example, the Associated Press (2009) compiled a U.S. "Economic Stress Index," which is described as "measuring financial strain."

Pearlin et al. (1981) described "economic strain" as a measure of the difficulty experienced acquiring both life's necessities (e.g., food, clothing, housing, healthcare) as well as some "optional accoutrements" (e.g., automobiles, recreation). This definition, along with later definitions of economic strain by the authors (e.g., Kahn & Pearlin, 2006), describes economic stressors as related to subjective perceptions regarding the sufficiency of income. Again, these measures are independent from objective income measures. This distinction reflects the idea that individuals with the same income may be faced with vastly different demands on said income, such as family size, where they live, and access to other economic resources (e.g., home ownership) (Kahn & Pearlin, 2006). Evidence supports the relationship between objective measures and subjective appraisal of one's financial situation (Conger et al., 1990; Pearlin et al., 1981; Simons et al., 1992).

Sears (2008) defined financial strain as, the affective worry or concern about one's financial situation. Financial strain may be considered an affective dimension of economic stress. Similar to the Pearlin et al. (1981) definition of economic strain, Sears defines a cognitive dimension of economic stress as the process by which individuals perceive their financial situation as inadequate to satisfy their needs and wants (Sears, 2008). Thus, the cognitive dimension, perceived income inadequacy (PIA), can further differentiate between one's ability to afford basic survival needs (PIA-needs) and the ability to afford lifestyle desires (PIA-wants) (Sinclair, et al., 2010). Incorporating these dimensions into Voydanoff's (1990) definition of economic strain, the measurement of subjective perceptions of economic stress should include both, the cognitive evaluation of, and affective reaction to economic stressors.

For the most part, investigations of economic strain have been the domain of academic disciplines other than industrial-organizational psychology (Sears, 2008). Research within the

diverse fields of gerontology (e.g., Li, Aranda, & Chi, 2007), developmental psychology (Conger et al., 1993), economics (e.g., Whelan & Maitre, 2007), public health (e.g., Olivius, Ostergren, Hanson, & Lyttkens, 2004), and sociology (e.g., Voydanoff, 1990) has uncovered important antecedents of economic stress. Findings from each of these fields have important social implications for the health and well-being of all people. However, these findings have made little impact in the field of I/O psychology. In part, this may be due to an attitude amongst organizational researchers that the economic concerns of employees are outside of their domain of interest. Conversely, I will show that economic strain important to consider within I/O psychology. Gaining a better understanding of the precursors of economic strain in employees has implications, not only for organizations, but for the population, in general.

The occupational health and performance implications of employment and financial demands should encourage researchers from multiple disciplines, including I/O psychology researchers, to focus additional attention on the employee experience of economic stress. Kahn and Pearlin (2006) found that experiencing chronic economic stressors and strain resulted in diminished health and well-being. In particular, the importance of economic stressors within the varied contexts of family, occupation, and economy demonstrates multidimensionality, such that when hardships occur, the effects disrupt multiple roles (Pearlin, 1999). Studies of economic stress indicate a relationship between stress and many variables outside of the workplace including diminished marriage quality (Conger et al., 1990), mental health (Dooley & Prause, 2002), physical health (Olivius, Ostergren, Hanson, & Lyttkens, 2004) and life satisfaction (Bailey & Miller, 1998). Because the employment relationship is closely related to many potential antecedents of economic stress, I/O psychologists and OHP researchers may provide a

unique perspective on the study precursors of economic strain. In order to take a preventative approach to economic stress research it is essential to have a detailed understanding of its causes.

Framework of Antecedents to Economic Stress

According to Voydanoff (1990), economic stress consists of both objective and subjective components associated with employment and financial dimensions of the employee experience (see Figure 1). As discussed above, the subjective financial or income-related aspect of the framework, *economic strain* may be regarded as more of a cognitive and affective response to the presence of economic stressors. The remaining aspects of economic stress, *employment instability, employment uncertainty, and economic deprivation*, may serve as antecedents of economic stress response.

Antecedents of economic stress include *employment instability*, which reflects an individual's employment history, status, and the duration of that status (Probst, 2005). In addition to employment-related stressors, finance-related objective stressors are important to understand as components of economic stress. These antecedents, defined as *economic deprivation* by Voydanoff (1990), include measures of worker income. Subjective indicators of economic stress include *employment uncertainty* and *economic strain* (Voydanoff, 1990). Employment uncertainty describes employment-related perceptions, such as job insecurity.

Objective Finance-related Antecedents – "Economic Deprivation"

The most obvious objective measure of an individual's financial status is their income. In general terms, income is a resource that when objectively measured, should have some relationship with perceptions of economic stress. However, there are many additional factors related to income that may also affect economic stress.

The implications of objective finance-related antecedents are of particular concern in the current economic context, given the continually increasing gap between low and high income groups in the U.S. (Hacker, 2004). Employees often have little control over the constraints on their income, particularly in periods of economic recession. Couch, Jolly, and Placzek (as cited in, Bauman, 2009) found that earnings losses by experienced workers, who lose their job during a recession, persist for more than six years afterwards whereas, earnings losses among those who lose their jobs in times of economic growth do not suffer persistent negative effects (Bauman, 2009). However, it is not only those who suffer job loss that can be affected by stress associated with a shortage of income.

People experience stress with regard to their financial situation, irrespective of their employment status (Creed & Evans, 2002). A large population affected by economic stress is the "working poor." As defined by the U.S. Department of Labor, the working poor are individuals who spent at least 27 weeks in the labor force (working or actively looking for work), but whose incomes fell below official poverty levels (BLS, 2010b). The calculation of family poverty level accounts for total income and number of family members, distinguishing between adults under and over sixty-five years of age, as well as children under eighteen. For example, the 2008 poverty level for one person under 65 was $11,201, whereas a family of two adults and two children the poverty level was $21,834. Estimates from prior to the current recession by the U.S. Bureau of Labor Statistics (BLS, 2003) categorized over seven million Americans as working poor; the number had risen to nearly 9 million in 2008 (BLS, 2010b). Over 30% of the U.S. population had at least one instance of poverty (lasting at least 2 months) in the period between 2004 and 2007 (DeNavas-Walt, Proctor, & Smith, 2009).

A calculation of income to poverty ratio from U.S. Census data indicates that nearly 40 million Americans lived at or below poverty-level threshold in 2008 (DeNavas-Walt, Proctor, & Smith, 2009). Over 53 million individuals, 18% of the population, live on family incomes below 125% of the poverty threshold (DeNavas-Walt, Proctor, & Smith, 2009). These individuals are either currently impoverished or at risk of poverty if wage increases do not keep up with increases in cost of living. The severity of poverty is increasing. Average incomes for impoverished families averaged $9,000 below poverty level in 2008, a growing gap compared to previous years (DeNavas-Walt, Proctor, & Smith, 2009).

The growth of the population of working poor in the U.S. is attributed to periods in which wages of workers fail to rise in accordance with the cost of living. Wage stagnation relative to inflation is an issue, particularly for low wage workers. In the period from September 11, 2001 to 2007, the average productivity of the American worker rose 15%, while their wage rose only one percent when adjusted for inflation (Greenhouse, 2008). This continues a long-term trend within the American private sector. Since 1979, hourly earnings for American workers in non-supervisory jobs (80% of all workers) rose only one percent (after inflation) (Greenhouse, 2008). Worker productivity has risen 60 percent over the same 30 year period. Rates of personal bankruptcies and foreclosures have more than tripled in the most-recent 25 years, compared to the time period before 1979. The share of the national income going to wages and salaries fell to its lowest level ever in 2006 (data goes back to 1929) (Greenhouse, 2008). The fall of the wage share has been replaced by the largest share of national income going to corporate profits since 1942 (Greenhouse & Leonhardt, 2006; Aron-Dine & Shapiro, 2007). Of course the problem of stagnating wages was not helped by the current recession during which median household income fell nearly 4% between 2007 and 2008 (DeNavas-Walt, Proctor, & Smith, 2009).

The rise in productivity per worker in the American private sector and the lack of increased wages, begs the question, who is benefiting from the increased productivity? For example, as Paul Krugman suggested prior to the recession, "It's a great economy if you're a high level corporate executive or someone who owns a lot of stock. For most other Americans, economic growth is a spectator sport" (Krugman, 2006; cf. Greenhouse, 2008, p. 7). In the face of increased national productivity, the bottom fifth of American household incomes rose just six-percent, while incomes for the top fifth rose an average of 88-percent, with the top 1% of household incomes rising 228% in the same time period (Greenhouse, 2008).

Low wages are not the only economic threat to employees in the push for corporate profits. Many employees may be one illness away from serious financial problems. Seventy-five percent of low wage workers do not have employee-sponsored health care benefits, nor do they receive paid sick days (Greenhouse, 2008). Not only do these hourly workers not get paid if they miss work, but they have no health insurance to offset the costs of medical care. Overall, the working poor are more likely to suffer economic stress due to low wages and a lack of access to healthcare coverage, paid leave, and child care services (Heymann, Boynton-Jarrett, Carter, Bond, & Gallinsky, 2002).

Whelan (1992), called for more careful study of those likely to be affected by economic stress, taking into account not only household income, but the demands of the household as well. The methods utilized to operationalize income have followed a wide range of approaches. Studies on income have ranged from using dollar amounts, to calculations of debt-to-savings ratios, comparison of resources to demands, and measures of income relative to household variables (Conger, et al., 1990; Elder, Jr. & Caspi, 1988; Simons, et al., 1992; Sinclair & Martin, 2006).

Objective Employment-related Antecedents – "Employment Instability"

One of the most commonly studied employment-based objective antecedents of economic stress is unemployment. The association between unemployment and stress is well documented (Hanisch, 1999; McKee-Ryan et al., 2005). As an individual indicator of stress-related health outcomes, such as depressive symptoms and physical illness, unemployment has been studied extensively (e.g., Cobb & Kasl, 1977; Creed & Bartrum, 2008; Howe, Levy & Caplan, 2004; Jackson & Warr, 1984; Platt & Kreitman, 1985). These studies have considered the effect of the individual's unemployment on individual level outcomes and, in some cases, the effect on their immediate family. Kessler, Turner, and House (1987) found that the positive association between financial strain and psychological distress is more pronounced among unemployed than employed workers. In fact, unemployment has been found to be one of the most stressful experiences an individual can undergo (Spera, Buhrfeind, & Pennebaker, 1994).

Official U.S. Department of Labor statistics indicate that the ranks of unemployed doubled from December 2007 to 2009, increasing from 7.5 million to 15 million. The number of long-term unemployed (those jobless for 27 weeks or more) has more than tripled since the start of the current recession. The U.S. unemployment rate continued to rise through October 2009 when it cleared 10%, the highest rate in over 25 years (BLS, 2009a).

Of course, unemployment and job loss are not new concerns. From 1983-1993, Fortune 500 companies reduced their workforces from 14.1 million to 11.6 million employees. The frequency of job loss has only worsened in recent years with 2 million jobs lost in 2001 alone and another 1.4 million in 2002 (Probst, 2005). Mass layoff events are defined by the U.S. Department of Labor as occurring when an organization has 50 or more initial unemployment claims filed against them in a 5-week period. The first quarter of 2009 saw 3,489 such events,

2,149 more than the first quarter of 2008. As a result of the layoffs, over 500,000 workers were added to the ranks of the unemployed, in only three months, bringing the total number of U.S. workers who have fallen victim to mass layoffs since the beginning of 2008 to over 2 million by the end of 2009 (Bureau of Labor Statistics [BLS], 2009c). These layoff and unemployment numbers are even more discouraging when one considers the number of individuals who do not meet the criteria to be counted among the unemployed.

In addition to unemployment, underemployment is increasingly prevalent. Dooley, Prause, and Ham-Rowbottom (2000) placed underemployment on a continuum which ranged from adequate employment, through inadequate employment, to unemployment. Underemployment encompasses both inadequate employment and unemployment. This is in contrast with previous definitions of underemployment, which included notions such as a mismatch between job requirements and skills or education (Beiser, Johnson, & Turner, 1993). The latter definition is largely subjective and focuses primarily on an individual's perception of their individual job requirements. However, in order to sufficiently and consistently distinguish employment from underemployment, a more objective definition of underemployment may be better suited to the study of economic stress. Objective definitions are more closely aligned with that of Dooley et al. as well as other researchers (Clogg, Eliasor, & Wahl, 1990; Probst, 2005) who broadly defined underemployment to include the unemployed, part-time workers seeking full-time employment, and low (poverty-level) wage employees. The Economic Policy Institute (EPI, 2003) defined underemployment as including the unemployed, discouraged workers, involuntary part-timers, and others desiring work but face barriers such as child care or transportation difficulties. This definition is less dependent upon individuals' perceptions of skill alignment with their work. Instead, underemployment is operationalized by measuring

economically-oriented indicators of the sufficiency of one's employment. Underemployment measures assessing the unemployed as well as those with inadequate employment (involuntary part-time and poverty-wage workers) are more readily aggregated to the macroeconomic level than some competing measures of underemployment.

In the 1970s, the U.S. BLS developed multiple unemployment indicators (U-1 thru U-6) to capture a range of unemployment and underemployment data which is, in part, analogous to the continuum described by Dooley and coauthors (2000). The most stringent category identifies only those who are unemployed for at least 15 weeks (U-1) (Hauger, 2009). The most inclusive category (U-6) has the potential to measure the underemployed as well as unemployed: including those categorized as discouraged workers, workers marginally attached to the labor force, and workers employed in part-time jobs for economic reasons. The "official" unemployment rate, most commonly cited in the press (U-3) is comprised of people without a job, who have actively looked for work in the prior four weeks, and are currently available for work. This measure excludes discouraged, marginally attached, and part-time workers looking for full-time jobs.

Strict adherence to the official unemployment numbers can underestimate the number of workers truly affected by a shortage of jobs. For example, marginally attached workers are those who looked for work over the past twelve months, but did not indicate looking for work over the four weeks prior to the survey (BLS, 2009a). Similarly, discouraged workers are those who desire work but have stopped looking because they believe no jobs are available to them. In mid-2009, there were 2.2 million workers marginally attached to the labor force in the U.S., a 177% increase from the previous year. The number of persons working part time for economic reasons (sometimes referred to as involuntary part-time workers) is over 9 million – having doubled during the recession (BLS, 2009a). Many of these employees have had their hours cut

back from full-time to part-time or workers who take part-time jobs, but would prefer full time work. The measure of U.S. unemployment, upon inclusion of the underemployed, marginally attached, and discouraged workers (U-6 measure) results exceeded 17% in 2009 (BLS, 2009a).

Irrespective of the methodology used by the U.S. Bureau of Labor Statistics for aggregate unemployment and underemployment measurement, comprehensive reviews of the detrimental effects of unemployment on the individual have been around for over 25 years (Horowitz, 1984). Likewise, the relationship between economic recessions and rates of mental hospitalization, suicide, and crime has been understood for some time (Brenner, 1973; Brenner & Mooney, 1983). The validity of these findings is bolstered by indications that upon reemployment, elevated levels of stress were eliminated (Kessler, Turner, & House, 1989).

Researchers have stated that underemployment may be a more robust indicator of individual economic well-being than unemployment (Feldman, 1996; Zvonkovic, 1988). For example, Zvonkovic (1988) found that underemployment was associated with lower levels of marital and financial satisfaction. Children of the unemployed and underemployed are not spared the negative effects. The financial stress associated with underemployment and unemployment has been found to result in social isolation of families due to a financial limitation on the ability to enjoy leisure activities (Probst, 2005).

In addition to employment status concerns, the cost of healthcare can be a major economic stressor for employees. Even for those with employer-provided health insurance, income often fails to keep pace with rising employee-share of coverage costs. Since 1999, premiums for employer-sponsored health insurance have more than doubled, increasing by 120%, whereas employee wages have lagged far behind, rising by less than 30% (Schoen, Nicholson, & Rustgi, 2009). As a result, the ratio of average health insurance premiums to

income in the United States continues to rise. In 2008, the average premium for employer-provided family coverage was $12,298. If the current rate of increase continues, then an average family will pay nearly $24,000 for coverage in 2020 (Schoen, et al., 2009). Current health care legislation, the "Patient Protection and Affordable Care Act," recently passed by the U.S. Congress may address some of these concerns. However, the cost of health care seems likely to be a continued concern for much of the population and, depending on the outcome of the 2010 midterm elections, attempts to scale back or repeal the legislation may occur.

In addition to concerns about cost, the number of individuals covered by employer-provided health insurance has continued to decline in recent years, falling to 58.5% of the population in 2008, compared to over 64% at the beginning of this decade (DeNavas-Walt, Proctor, & Smith, 2009). A growing number of individuals were dependent upon government provided health care (e.g., Medicaid and Medicare). In a single year, 2008, the rate of those relying on government provided health care increased by over 5% (DeNavas-Walt, Proctor, & Smith, 2009). In addition, a growing number of individuals (over 15% of the population) remain without health insurance of any kind. Not surprisingly, the proportion of people with health insurance is higher among those with higher incomes. Full-time workers were more likely to be covered than part-time workers, with a growing number of part-time workers (over 25%) among the uninsured (DeNavas-Walt, Proctor, & Smith, 2009). The increase in cost and decreasing availability of employee-provided health insurance would not be as worrisome if wages could be expected to rise at a similar pace to health care costs. However, in recent years, the average employee wage has been shrinking, even as productivity has risen and, as health care costs continue to rise.

Increased attention should be given to the effects of objective employment-related stressors, in addition to an individual's employment status. Previous research has relied heavily on comparisons of stress perceptions of unemployed samples and employed samples. Studying antecedents such as underemployment and health care coverage can provide additional insight into perceptions of economic stress by current employees.

Subjective Employment-related Antecedents – "Employment Uncertainty"

In addition to the importance of objective antecedents, subjective employment-related stressors are indicative of economic stress perceptions. The majority of studies of this ilk have focused on the impact of job insecurity on individual employees (Probst, 2005). Particularly in a struggling economy, job insecurity can be a major source of stress for individual workers. Differing definitions of job insecurity cover a range objective and subjective criteria, however, when considering the effect of job security on an individual employee, the subjective perception of insecurity is a key concern. Job insecurity is typically considered a stressor (Ashford, Lee, & Bobko, 1989; Probst, 2003; Sverke & Hellgren, 2002) within the stressor—strain framework of occupational stress. Storseth (2006) provides a concise definition of an individual measure of job insecurity as a combination of the perceived threat of job loss and a lack of power to ameliorate the threat.

A considerable amount of research has demonstrated a connection between employee perceptions of job insecurity and outcomes detrimental to organizations and employees. The relationship between job insecurity and psychological distress is well established (Dekker & Schaufeli, 1995; Kuhnert & Vance, 1992; Probst, 2003; Probst, et al., 2007; Roskies, Louis-Guerin, & Fournier, 1993). While more research is necessary to investigate the role of job insecurity on its job-related correlates (Cheng & Chan, 2008), there is mounting evidence that

job insecurity contributes specifically to work-related stress and health-related outcomes in employees (Sverke, Hellgren, & Naswall, 2002).

A recent meta-analysis by Cheng and Chan (2008) compiled evidence from numerous job insecurity studies and studied the relationships with a number of important job-related outcomes. Results showed that job insecurity was negatively related to trust, job satisfaction, organizational commitment, work performance, and job involvement, and was positively related to turnover intention. Additionally, and particularly important to OHP researchers, job insecurity was negatively related to both psychological and physical health. The results of the meta-analysis suggested that these associations were significantly different from zero. Job insecurity was negatively related to psychological health ($r_c = -.28$) and physical health ($r_c = -.23$) across the studies.

The results of the meta-analysis also suggested that these relationships were subject to certain moderating effects. Cheng and Chan (2008) found that organizational tenure moderated the relationship between job insecurity and health. The association between job insecurity and physical health was more profound among employees with longer tenure than employees with shorter tenure. Age moderated the effects of job insecurity on psychological health, and physical health such that the effect of job insecurity on psychological health and physical health was stronger among older employees than younger employees. Overall, Cheng and Chan found that health-related effects of job insecurity are more likely to be suffered by older and longer tenured employees. Other researchers theorized that shorter tenure would be associated with lower levels of job insecurity, due to prevalence of the "last hired, first fired" mentality when layoffs are implemented (Luthans & Sommer, 1999). However, Feldman (1996) argued that the reduced likelihood of older workers to be laid-off may be offset by the increased worry about the

difficulty of finding a new job at an older age. Union membership may moderate the relationship as well. Union employees are more protected from concerns regarding job loss, thus may be less vulnerable to the negative effects associated with job insecurity (Probst, 2005).

Probst, Stewart, Gruys, and Tierney (2007) called for additional research to help clarify the process by which job insecurity is associated with employee stress. One suggestion is to examine indicators of an employees' financial situation. Probst and Lawler (2006) suggested that employees with less financial security may, by necessity, be more concerned with job security than more affluent workers. Thus, because their financial status, they may be more likely to experience economic stress. Because disadvantaged workers may be more likely to encounter job strain and insecurity, it is possible that unmeasured aspects of their financial status explain the increased levels of stress (Strazdins, D'Souza, Lim, Broom, & Rodgers, 2004).

In addition to job insecurity, there are other potential subjective employment-related antecedents of economic stress. Satisfaction with health care can be a major contributor to an individual's perception of economic stress. While measures of the objective cost of health care are certainly important, assessment of the sufficiency of one's health care coverage may also be an important indicator of economic stress. Research has shown that attitudes and behavioral outcomes differ across organizations with distinct health care benefit systems (Sinclair, Leo, & Wright, 2005). Furthermore, the authors found evidence of differences in subjective assessments of benefit systems within organizations. With trends indicating that employees are responsible for a larger share of employer-provided benefit cost every year (Schoen et al., 2009) and research demonstrating a relationship between benefit costs and employee attitudes toward benefits (Sinclair, Hannigan, & Tetrick, 1995; Williams, 1995) measurements of benefit satisfaction have the potential to be closely related to perceptions of economic stress. In the context of union

membership, given the potential beneficial effect of a union's collective bargaining on benefits (Barling, Fullagar, & Kelloway, 1992), one might hypothesize that attitudes regarding benefits differ in a union setting. However, Sinclair et al. (1995) found that union membership did not affect the relationship between benefit coverage and attitudes. Thus, union membership may not affect employee attitudes regarding benefits.

In line with the aforementioned shifting of economic risk from the employer to the employee (Prause, Dooley, & Huh, 2009), employment is increasingly being repackaged, contracted, and outsourced in a payment-per-task model, without the assurance of future work (Dooley & Prause, 2004). As a result, individuals perceive greater levels of job insecurity than in the past (Schmidt, 1999). Within this context of insecure employment, relationships assuring employees of full-time work in a steady job until they choose to retire with benefits such as comprehensive health insurance and employer-supported pensions increasingly appear to be artifacts from a bygone era.

Macroeconomic Antecedents of Economic Stress

In addition to the individual-level antecedents of economic stress, there may be elements of the local economic context that affect the likelihood of an individual to experience economic strain. Historically, there has been interest in macroeconomic measures to help quantify the economic well-being of the population. One such measure in the U.S. is the national unemployment rate. Unemployment rate is seen as a "yardstick for assessing the number of persons who experience some level of 'financial hardship'—that is, the number of persons who, to varying degrees, have a lifestyle that affords them no more than life's basic necessities" (Haugen, 2009, p. 4).

Despite being a *de facto* measure of financial hardship, unemployment rates lack much of the necessary information to be considered a definitive measure. Without considering household financial factors such as savings, debt, number of dependents, or cost of living – to name a few – one cannot ascertain the extent of financial hardship strictly from a percentage of the population currently looking for work. Nevertheless unemployment rates are a good starting point for understanding macroeconomic stressors.

Unemployment rates have been measured in different ways. Studies have measured unemployment for industrial sectors (e.g., Reynolds, 1997), occupational sectors (e.g., Fenwick & Tausig, 1994), broad geographic regions, or a compared a few distinct communities (e.g., Dooley, Catalano, Brownell, 1986). Further muddying the waters of unemployment rate measurement are the criteria separating the unemployed from the employed and underemployed. The most commonly cited and most widely published U.S. measure of unemployment rate is the Bureau of Labor Statistics' U-3 rate. "Persons are classified as unemployed if they do not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work" (BLS, 2009b, p. 1).

Involuntary part-time and discouraged workers are not counted in the U-3 rate, instead they are lumped into a group officially considered "not in the labor force" or "marginally attached" to the workforce. Not only must a worker without a job indicate searching for a job in the last four weeks, but they cannot indicate that any responsibilities such as attending school, family responsibilities, or transportation issues would preclude them from taking a job to be counted among the official unemployment rate (BLS, 2009a). As of April 2010, BLS (2010a) figures indicate that over 2.4 million U.S. workers who want a job and are available to work were considered marginally attached to the labor force for one of the aforementioned reasons. In

addition, there were approximately 1.2 million workers available for work, but had stopped looking for a job because they feel there were none available. Finally, over 9 million workers have settled for part-time work (less than 35 hours per week) because they cannot find a full-time job. In sum, over 12.5 million workers are experiencing employment difficulties, in addition to the 15 million workers categorized as unemployed by the U-3 rate (BLS, 2010a).

Similar measurement issues exist when assessing unemployment rates world-wide. For example, studies comparing the U. S. unemployment rate definitions with definitions used by other countries found that Japan and Sweden, the countries with the lowest unemployment rates as conventionally measured, had the largest increases when the definition was expanded to include persons working part time for economic reasons and discouraged workers (Sorrentino, 1993; 1995).

A weaknesses commonly associated with studies relying on aggregated measures may apply to unemployment rate research. Many studies of unemployment rely on data that represent large geographic areas (e.g., state or nation). However, due to the fact that nations and even most states are comprised of multiple related yet independent economic regions, the aggregation of data at some levels may represent an average economic experience that does not truly represent any one area (Dooley & Catalano, 1988). For example, researchers contend that state-level unemployment data is insufficient as a geographic distinction for macroeconomic indicators (e.g., Catalano & Dooley, 1977). Economic data aggregated by state will be heavily influenced by conditions in the most populous areas; particularly, if they differ from other areas within the same state, the economic indicators become muddled (Catalano, Dooley, & Jackson, 1985).

Research indicates that the local economic context affects individual worker outcomes. Fenwick and Tausig (1994) found that higher occupational unemployment rates were associated with increased job demands, elevated stress, and lower life satisfaction. Similar to the way in which an occupational unemployment rate can influence a worker in the context of their job or industry, a local unemployment rate is a salient indicator of the pressures within one's local geographic context. Robert (1998) utilizing local unemployment rate as a measure of community-level economic functioning, found that local economic context was related to health. Turner (1995) found that unemployment was more stressful for an individual when the unemployment rate is high and employment opportunities are few. A study of the relationship between aggregate unemployment rates and suicide ideation indicated a small but significant effect (Dooley, Catalano, Rook, & Serxner, 1989).

Dooley et al. (2000) studied local unemployment rate as a moderator of the relationship between a change in employment status and depression. Although local unemployment rate failed to moderate the relationship, Dooley et al. (2000) found a significant main effect of unemployment and underemployment on depression. These direct effects persisted, even when potential mediators of income, job satisfaction, and marital status were included in the model.

Dooley, Catalano, and Rook (1988) also found evidence of a direct effect between an aggregate indicator of unemployment and individual psychological health symptoms. Even after controlling for four individual indicators of unemployment, the direct effect of unemployment rate was present. The significant main effect of aggregated unemployment rate, when controlling for individual unemployment indicated that a high unemployment rate in a community may have effects beyond the individuals who experience a change in their employment status. However, the study found no evidence for cross-level interactions between

aggregate and individual-level indicators of unemployment. The authors suggested that future studies should explore in more depth the manner in which the employed are affected by the changes in their economic climate (Dooley, et al., 1988, p. 119).

Gaps in Research

Multilevel Modeling of Economic Stress. In difficult economic times, good-paying jobs become scarce and job creation can come to a virtual stand-still (Perrucci, 1994; Feldman, 1996; Zvonkovic, 1988). Within the harsh employment context of a recession, even the perceptions of gainfully employed individuals regarding their economic status can change (Probst, 2005). Certainly, economic stress is not exclusive to those employees who are directly experiencing underemployment or unemployment populations (Whelan, 1992). However, the understanding of precisely how the economic context affects employee perceptions of economic stress is far from complete.

Previous researchers, such as Voydanoff (1990), approached the study of antecedents of economic stress from an individual-level perspective. That is, they primarily studied the relationship between an individual's financial and employment stressors and perceptions of economic strain. Understanding of the economic stressor—strain relationship can be augmented by the inclusion of additional information about the context in which stressors occur. Therefore, studies measuring objective economic stressors at a higher level, such as the local economic conditions of a particular geographic region, have the potential to further the understanding of antecedents of individual perceptions of economic stress.

The utilization of a multilevel approach in the study of economic stress has a number of advantages. Bliese and Jex (2002) made the case for use of multilevel studies of occupational stress stating, "individual-level models are too simplistic to accurately model complex

phenomena such as those studied in organizational behavior and public health" (p. 265). In the study of stress, the primary level of analysis is often individual-level perceptions and the most immediate and intuitive predictors of stress are individual-level predictors. This is largely the case in prior studies of economic stress. However, there are advantages to looking beyond the low-hanging fruit in pursuit of higher level antecedents of economic stress.

The antecedents of economic stress can be assessed in a hierarchical structure. Although the criterion measure of economic stress may be at an individual level, the variables that influence an individual's perceptions may reside at both the individual level and at higher levels. Using multilevel analysis, it is possible to study many levels of analysis simultaneously, with variables nested at the local, state, regional, and/or national level. The level at which an analysis is conducted has ramifications for the application of findings from a study. For example, individual outcomes may be improved by public policy enacted in response to findings at the appropriate group level (Angeles, Guilkey, & Mroz, 2005). In many multilevel analyses the effect of the 'macro-level' variables is of primary interest, while the individual level indicators may appear solely as control variables within the multilevel model (Angeles, et al., 2005).

Multilevel analysis accounts for the effects of variables at each level of a hierarchy. The individual-level or level 1 variables are nested within the higher level group variables. Higher level (also called, 'level 2,' 'group-level,' or 'contextual') variables are defined such that they do not differ within groups. These variables are often of interest due to the ability of higher level variables in the hierarchy to influence individual outcomes of interest. The inclusion of level 2, community-level predictors of economic stress can provide additional information about the relationship regarding the context in which economic stress occurs. In multilevel analysis, predictors of economic stress occur at the individual level, such as an individual's financial

situation, as well as at higher levels. For example, descriptors of the local economic situation, such as unemployment rate, may be a salient level-2 variable with regard to individual perceptions of economic stress.

Consider the importance of multilevel analysis in the context of economic stress, given the following example. The effect of income on economic stress may differ drastically depending on the level of measurement. One might expect to find higher perceptions of individual economic stress to be associated with lower levels of individual income. Thus, at level 1, there is a negative relationship between income and stress. Whereas an analysis at the higher level, using a measure of average income at the macroeconomic level of a geographic region, may demonstrate the opposite relationship relative to individual worker's perceptions of economic stress. Living in a region with higher aggregate incomes may be associated with higher levels of stress. For example, perceptions of relative deprivation compared to one's neighbors have the potential to affect perceptions of income adequacy and economic strain (Boyce, Brown, & Moore, 2010). Thus, one would expect a positive relationship between regional income and stress. As a result of the multilevel analysis, one can reveal that different levels of analyses may not produce the same results. These seemingly conflicting results demonstrate the need for both theoretical and analytic models that consider both levels simultaneously, since both levels have important and related implications (Kreft & De Leuuw, 1998).

Surprisingly, macroeconomic factors have not received a lot of attention in research on individual perceptions of economic stress. In fact, there is a shortage of studies in stress research that have examined the effects of different types of stressors across multiple levels of analysis (Tucker, Sinclair, & Thomas, 2005). While the effects of economic recessions on macro-level

rates of unemployment and underemployment are well documented, the impact of aggregate rate of unemployment on individual perceptions of stress is not thoroughly understood.

Macroeconomic Antecedent Framework. The distinction between individual-level employment- and finance-related antecedents by Voydanoff (1990) is also applicable to antecedents at the macroeconomic-level. In addition to local economic indicators of the current employment context (e.g., unemployment rate), macroeconomic variables indicative of the financial status of residents in a community may contribute to individual perceptions of economic stress. Measures indicative of the cost of living or income within a geographic region may provide additional insight into an individual's likelihood to experience economic stress. For example, indicators such as average monthly mortgage payments and average area incomes may predict perceptions of economic stress. A higher mortgage payment, as an indication of a higher cost of living in a region, may operate as an economic stressor. If individuals in a geographic region generally have to pay more for housing than in another region, however do not, on average, make a higher wage compared to the other region, perceptions of economic stress may be affected.

Looking solely at official unemployment figures to gauge the extent to which a population is experiencing economic stress fails to account for workers on the margins of the workforce and the underemployed. Tausig and Fenwick (1999) studied the effects of the 1974-1975 U.S. economic recession on aggregated (mean) changes in reports of well-being. They found that increasingly inadequate pay accounted for 25% of the total change in dissatisfaction, while unemployment was found to account for the largest change in distress. Distinct effects were found for an aggregated measure of income versus an aggregated employment-related measure. This lends credence to the framework distinguishing finance- and employment-related

stressors, in that they may have related but distinct effects at the macroeconomic level. One distinction between the current study and research by Tausig and Fenwick is the level at which stress is measured. While the previous research relied on aggregate measures at for both predictor and criterion variables, the current study attempts to measure the effects of macroeconomic stressors at the individual level.

The notion that additional macroeconomic features of one's surroundings may affect worker stress is supported by inferences of previous researchers. Pearlin (1989) argued that studies should examine, "levels of stress among people who are exposed to similar social and economic conditions" (p. 242). Fenwick and Tausig (1994) encouraged further development of an economic stress literature that studies the effect of aggregate macroeconomic stressors. Fenwick and Tausig's (1994) assessment of the influence of macroeconomic variables was focused on how the effects of stressors were mediated by the work environment. While it is important that the researchers study the effect of macroeconomic stressors relative to work conditions, it may be unnecessarily limiting to expect only indirect effects on perceptions of economic stress. For example, findings regarding the size of direct effects of macroeconomic stressors on individuals' stress perceptions could result in a meaningful measure that estimates the average economic stress perceived by individuals within a geographic region.

By studying a broad array of potential antecedents from multiple levels, researchers can gain additional insight into the precursors of economic stress. For example, studying the effects of macroeconomic indicators in addition to unemployment rate can advance the study of economic stress. By quantifying the impact of several indicators of the economic context on individual perceptions of economic stress, a researcher could produce a meaningful index of

economic strain. A simple example of this type of measure is the Economic Misery Index (EMI).

The EMI was developed by economist Arthur Okun as a contribution to the presidential campaign of Jimmy Carter. The index was intended to demonstrate the dire state of the economy during the tenure of President Gerald Ford (Santerre, 2003). In its original form, the EMI was simply the sum of the national unemployment and inflation rates. The underlying assumption of the EMI was that the combination of unemployment and inflation as a single indicator is more descriptive than either indicator alone. Clearly, there are many weaknesses of the EMI that we can learn from. The EMI is an oversimplification with only two indicators, which were not optimally weighted. Furthermore, the effects of unemployment and inflation may be differential, perhaps based on aggregate indicators of financial status regarding savings, investment, and potential for inflation offsetting wage increases (Shonkwiler & Moss, 1993).

A more robust index of economic strain would theoretically be grounded in the proposed framework of macroeconomic antecedents of economic stress. Studies of individual economic strain incorporating employment-related and finance-related indicators of the local economy have the potential to assess the extent of economic stress likely to be suffered by residents of a community. Quantitative research utilizing this framework would potentially be a first step toward an optimized model of economic strain, with evidence that macroeconomic indicators have direct effects on individual perceptions of economic stress.

Theoretical Basis

Workers can face different types of stress in relation to employment; for example, job stress and economic stress (Reynolds, 1997). The first, job stress is related to the tasks required to perform one's job (Karasek & Theorell, 1990). A second form of stress, economic stress,

occurs as a result of perceptions of unfavorable economic conditions (Reynolds, 1997). Just as the work environment is relevant to the study of job stress, the economic context is an important consideration in the study of economic stress. Thus, early studies of economic stress considered the possibility that stressors may arise from both aggregate or contextual level variables as well as those at the individual level (e.g., Brenner, 1973; Catalano & Dooley, 1977).

A fundamental link between models of job stress and economic stress is the emphasis on the environment with which one interacts. Just as studies of work stress emphasize properties of the work environment as the primary source of stress, a similar approach to economic stress in employees must arise from the same fundamental assumption: economic stress arises from properties of the immediate economic environment. Theories regarding the impact of stressors on individual perceptions of occupational stress depend primarily on properties of the work environment. For example, the Job Demands-Control (JD-C) model of employee stress states that jobs, supervisors, or organizations that provide individuals with sufficient autonomy are better able to withstand job demands (stressors) (Karasek, 1979). According to the JD-C model (Karasek, 1979) job strain is primarily caused by high demands combining with low control over those job demands. However, there is inconsistent support for the buffering process of high levels of control in conditions of high demands (De Jonge & Kompier, 1997; Van der Doef & Maes, 1999). It may be the case that only some demands are buffered by job control. Bakker and Demerouti (2007) contend that, "job control is only partly able to buffer the impact of job demands on employee well-being" (p. 310).

Compared to the JD-C model, a more expansive model of stress is the Job Demands-Resources (JD-R) model. The JD-R model considers numerous aspects of working conditions in relation to both positive and negative aspects of employee well-being (Demerouti, Bakker,

Nachreiner, & Schaufeli, 2001). The JD-R model describes that regardless of the qualities of the specific occupation, stressor can be categorized as either *job demands* or *job resources*. The central assumption of the JD-R model is that job strain occurs when job demands are high and when job resources are limited (Bakker & Demerouti, 2007). Thus, job demands are not necessarily negative. However, they can result in stress when the cost of meeting those demands requires a great deal of effort, to the extent that the effort is out of balance with available resources.

A potential weakness associated with employing either the JD-R or JD-C model to economic stress is the focus on job characteristics as predictors of stress. As stress studies specializing in such subfields as work-family balance have demonstrated, precipitators of employee stress are not exclusive to work characteristics. A model of economic stress should encompass a full range of potential antecedents, which are likely to exist both within and outside of the work environment. While Karasek (1979) agreed that "fear of unemployment or occupational career problems might also contribute to these measures" (p. 291), economically-focused stressors have received little attention from researchers of these models. Casting a wider net regarding the range of demands and resources has the potential to increase knowledge regarding the relationship between stressors and strain.

The application of a stress model to the economic context requires consideration of the relationship between stressors and the resources one has available for coping. Hobfoll's (2001) conservation of resources theory (COR) states that motivation is directed toward the accumulation or maintenance of resources. Stress occurs when people are threatened with potential loss of resources, experience actual loss, or fail to gain resources after an investment (Hobfoll & Shirom, 2001).

The suitability of the application of COR to the study of economic stress is apparent when considering the definitions of resource types. Hobfoll and Shirom (2001) specified four categories of resources within COR: 1) objects (e.g., house); 2) conditions (e.g., job security); 3) personal characteristics (e.g., social status); 4) energies (e.g., money, credit). A COR perspective on economic stress implies that economic strain arises from economic conditions that threaten the loss of resources such as income, home ownership, or job security. The relationship between resource loss and stress is illustrated by studies of stressful events. Among the leading causes of stress on life events lists are loss of job, financial loss, loss of freedom, loss of health, and loss of a loved one (Brown & Harris, 1978; Dohrenwend et al., 1990).

Hobfall and Shirom (2001) identified two types of resources: intrinsic and extrinsic. Intrinsic resources are subjective assessments of individuals' physical, emotional, and cognitive energy. Extrinsic resources are objective assessments of tangible resources, such as money in the bank or available credit. The majority of COR research has focused on the impact of intrinsic individual resources. For example, COR research on burnout focuses primarily on the depletion of emotional, physical, and cognitive energy (Hobfoll & Shirom, 2001). Research on the depletion of extrinsic resources and stress has been relatively neglected.

In accordance with COR theory, employees seek to obtain and protect the resources they value. Stress is experienced in relation to a potential (or actual) loss of these resources. Although, resource loss and gain have opposite effects on levels of stress, a loss has a greater detrimental effect on stress levels than a gain of equal measure (Hobfoll, 2001). In an economic context, this evokes ideas set forth within prospect theory (Kahneman & Tversky, 1979). Prospect theory describes the judgment heuristic in which individuals value losses to a greater extent than gains. Rather than attend to the total assets in one's possession, individuals have a

tendency to attend primarily to the immediate gain or loss. According to prospect theory, we are more likely to evaluate our assets with regard to recent changes, with losses looming larger than gains (Hastie & Dawes, 2001). Thus, as is often the case in a recession, losses or the threat of losses are likely to loom large as a potential stressor. It may be more important to study the effects of antecedents of economic stress during a time of economic crisis than it is to study their effects during a period of economic growth. In an economic stress context, negative conditions (economic recessions) are likely to have a greater effect on stress perceptions than positive economic conditions (economic recoveries).

COR describes a focus on obtaining and protecting resources in the face of loss. However, according to Hobfoll and Shirom (2001), those with fewer resources are more susceptible to loss. Individuals without access to "strong resource pools" are more likely to experience increased loss and be more susceptible to future losses (Hobfoll, 1998). For example, divorce is a loss of a marriage, however it may also be associated with a loss of income, child care resources, social support, or of a home. The initial loss begins a loss cycle or downward spiral in which each loss weakens one's resource pool (Hobfoll & Shirom, 2001), making it more difficult to deal with subsequent, seemingly inevitable, stressors. A loss of resources, particularly for an individual with a shortage of resources to begin with, is likely to have a greater effect on their level of stress than a gain of equal magnitude.

Overall, COR theory illustrates that people attend to losses to a greater extent than gains. Thus, even when resources are sufficient, the threatened loss of a resource is impactful. COR does not completely dismiss the importance of appraisals, central to the highly influential transactional approach to stress (Lazarus & Folkman, 1984). However, explicit comparison of demands to resources is not central to the model. Even in the face of a primary appraisal

indicative of sufficient resources, an individual is motivated to avoid a loss. Therefore, although much ado is made about the individual nature of appraisals, in the face of an unambiguous, salient stressor, such as an economic crisis, individual appraisals may be very similar (Hobfoll & Shirom, 2001). Potential individual differences in appraisals of economic stress may be due to objective differences in one's employment or financial situation, which imply differences in one's resource pool. By measuring objective economic antecedents of stress, the predictive validity of individual perceptions of economic stress may be increased.

Multilevel Application of COR Theory

Over thirty years ago researchers concerned with macroeconomic effects on stress emphasized the importance of measuring qualities of the labor market, such as unemployment (Brenner 1973; Brenner & Mooney, 1983; Catalano & Dooley, 1983). Theory supporting the relevance of macroeconomic indicators as predictors of individual levels of stress is derived, in part, from a human ecology approach (Fenwick & Tausig, 1994). In this approach, negative elements within a macroeconomic context operate as stressors, creating awareness of a risk of loss within their community; whether it is loss of employment or other financial risks.

However, the interpretation of economic stress studies assessing variables solely at the aggregate level, pose a risk of the ecological fallacy (Catalano & Dooley, 1983). That is, if the results of a study indicate a relationship between unemployment rate and heart disease at aggregate levels, the results should not be generalized from the aggregate to the individual-level. It cannot be inferred that individuals who become unemployed are more likely to suffer heart disease. Instead, the results should only be applied to the level at which they are found. As a result, studies occurring at the individual level (with an individual-level criterion variable) tend to ignore aggregate or ecological context variables (Fenwick & Tausig, 1994). For example,

rather than measure the aggregate effect of economic antecedents on individuals, researchers often choose to compare unemployed individuals to those who are employed.

However, in the search for the influence of macroeconomic indicators on individual job characteristics, the direct of effects of macroeconomic stressors on stress perceptions of current employees have not been fully explored. As Tausig and Fenwick (1999) describe, a recession leads to deterioration of the market for both employees and organizations. From an employee perspective, the contraction of the job market as indicated by a rising unemployment rate may result in additional economic stressors, for example, greater competition for fewer jobs. Rather than assuming that these effects operate through mediating job demands (Fenwick & Tausig, 1994), it is important to comprehensively assess the direct effects as well.

COR is an integrative theory, in that it considers environmental influences on the stress process in addition to individual cognitive processes. Understanding the economic context in which an individual operates is important. A key to understanding the stress process is acknowledging that no single level is the primary active agent in the process (Hobfoll, 2001). As social beings, the complex social aggregation of people into groups (e.g., communities) is central to a resource-based approach to stress. This emphasis is in contrast with appraisal-focused stress models, which largely ignore context. Although appraisal may be used to assess the state of one's resources, most resources can be objectively measured (Hobfoll, 2001).

The growing emphasis on resource theory in stress research may be due to the "increasingly precarious condition of people's resources" which is the product of changing economic conditions (Hobfoll, 2001, p. 340). COR theory can be applied to modeling the effects of macroeconomic factors in order to describe the effect of the local threats to resources and resource loss on individual perceptions of economic stress. Particularly during a recession, a

scarcity of jobs and propensity of wage reductions are likely to bring about worries about the consequences of losing one's own job and income. If macroeconomic measures are indicative of threatening economic conditions, i.e., threats to individual resources, they are likely to be associated with increased economic strain. Conversely, individuals working within a healthier economic context with low unemployment rates may perceive less of a threat to maintaining their employment. Thus, perceptions of economic stress would be lower. If employment status is a valued resource by an individual, an indication that the resource is becoming more difficult to obtain, retain, and protect is likely to be associated with perceptions of stress, according to COR theory (Hobfoll, 1998).

Research shows that the relationship between financial measures and affective reactions can differ depending on the level of measurement. At the individual level, the absolute-income hypothesis states that individuals with higher incomes are happier than those with lower incomes (e.g., Diener, 1984). Conversely, at the group level, living among those with higher incomes has been found to be more stressful than living with those of equal or lower incomes (e.g., Clark & Oswald, 1996). Thus, at the community-level, in accordance with the reference-income hypothesis, the income of a reference group is expected to be positively related with economic stress perceptions (Boyce et al., 2010). The hypothesis pertaining to the group level fits well with COR theory, given that one perceives a shortage of income in comparison with others in one's community, which results in affective or cognitive strain. Thus, by objectively measuring, for example, the average income within a worker's community, one can approximate the extent to which an employee lives among those with higher incomes.

Hobfoll (2001) argues that the personal subjective component of stress has received too much theoretical weight in the literature. COR theory suggests that all stress studies should

consider subjective, socio-cultural, and objective elements of resources. Hobfoll (2001) contends that objective measures are of greater consequence under the following conditions: 1) a stressor is unambiguous; 2) objective circumstances have a strong impact on resources; 3) there is biological or cultural importance imbued within the circumstances; 4) the circumstances pose a major threat within the community. For these reasons, COR theory is a good fit for research on economic stress. Both the current economic context and individuals' financial situations are salient stressors with measurable objective qualities that impact resources. Furthermore, one's economic situation is at its basest level essential for satisfying the needs for survival as well as fulfilling culturally influenced "wants." Finally, there are major threats to community stability from economic stressors and a lack of economic resources. An approach to the study of economic stress informed by COR theory should incorporate objective measures at both the individual and community levels as well as subjective individual-level measures.

Although COR theory supports the investigation of the impact of macroeconomic resources, Hobfoll (2001) emphasizes exercising caution when forming predictive hypotheses regarding the effect of contextual level resources. Previous studies have found that in some contextual settings, resources may even be harmful. For example, Hobfoll and London (1986) found women with greater psychosocial resources experienced greater stress during a period of community distress due to an increased demand to help others. Despite the potential for counter-intuitive findings, this study will hypothesize both contextual and individual level effects on economic stress.

Hypotheses

The preceding discussion has emphasized the need to expand the study of economic stressors beyond a handful of indicators, instead focusing on a comprehensive framework.

Twenty-years ago, Voydanoff (1990) established a framework of individual stressors, including a distinction between employment- and finance-related economic stressors. Although, the employment and household financial contexts are closely related, each context may have distinct influences on individuals' perceptions of stress. Not all individual economic stressors related to one's financial situation are directly attributable to employment, or vice versa. For example, it has been suggested that one's household income or levels of household debt are more important than individual income for stress perceptions (Sinclair, 2010). Although these dimensions are intuitively compelling, I am unaware of any studies examining evidence of a factor structure of economic stressors.

In addition, this paper proposes that economic stress is a function of both macroeconomic and individual-level antecedents. Similar to the proposed factors at the individual level, indicators of the macroeconomic context may represent a similar factor structure. There are aspects of the local economic context that represent threats to employment, such as unemployment rate. Other indicators of the local economy, such as average cost of home ownership, are distinct from employment-related stressors, yet are also potential antecedents of economic stress. Thus, an examination of employment- and finance-related factors of the macroeconomic context is proposed. An initial exploratory factor analysis of U.S. macroeconomic indicators, aggregated by geographic region, provided evidence for this two factor structure; the two factors explained 63% of the variance (Sinclair, 2010). A confirmatory approach to these factors is warranted. Thus, in consideration of the proposed multilevel framework, the first objective of this study is to investigate evidence of a four factor structure of objective antecedents of economic stress. A multi-level confirmatory factor analysis will be conducted at both the individual and macroeconomic levels to assess the presence of separate

employment-related and finance-related antecedent factors of economic stress. The confirmatory factor analysis will test the following two hypotheses:

H1: Objective individual-level antecedents will converge in a two-factor solution: Employment-related and Finance-related dimensions.

H2: Macroeconomic antecedents will converge in a two-factor solution: Employment-related and Finance-related dimensions.

Another objective of the study is to quantify the effects of multilevel antecedents on individual perceptions of economic strain. Most researchers have studied antecedents of economic stress from the individual-level perspective, focusing primarily on the effects of employment status, job insecurity, and income. The relationship of individual level stressors and economic stress has been established within the literature. This study contributes to the literature by assessing the effect of the individual-level factors on economic strain. If the related but distinct employment-related and finance-related factors of economic antecedents have effects on perceptions of stress, the findings can provide guidance for whether interventions should target properties of the workplace or household financial aspects, for example. In addition to the objective individual-level factors, past studies indicate that subjective perceptions of job insecurity affect economic stress. Those effects should be assessed in concert with the objective factors in order to provide insight into the unique effects of objective and subjective antecedents.

In accordance with COR theory, measures of the macroeconomic context may operate as stressors indicative of threats to employee's personal resources. Thus, much like individual-level stressors, these indicators may have direct effects on individual perceptions of economic strain. Although past research on economic stress has identified stressors at both the macro- and individual-levels, few studies have tested indicators at both levels simultaneously (Reynolds,

1997). Furthermore, past economic stress studies have depended almost exclusively upon single measures of the economic context (e.g., unemployment rate). Therefore, the opportunity to test the incremental effects of local macroeconomic indicators relative to the predictive ability of individual stressors can advance our understanding of the antecedents of economic stress. The direct effects of the macroeconomic factors will be assessed, after controlling for the effects of individual-level stressors, as described by the hypotheses below:

H3: Macroeconomic factors will be significantly related to higher levels of financial strain when controlling for individual-level antecedents.

- *H3a– Individual-level Employment-related Factor will have a positive relationship with economic strain.*
- *H3b – Individual-level Finance-related Factor will have a positive relationship with economic strain.*
- *H3c – Job Insecurity will have a positive relationship with economic strain.*
- *H3d – Macroeconomic Employment-related Factor will have a positive relationship with economic strain.*
- *H3e - Macroeconomic Finance-related Factor will have a positive relationship with economic strain.*

H4: Macroeconomic factors will be significantly related to lower levels of perceived income adequacy for wants when controlling for individual level antecedents.

- *H4a– Individual-level Employment-related Factor will have a positive relationship with economic strain.*
- *H4b – Individual-level Finance-related Factor will have a positive relationship with economic strain.*

- *H4c – Job Insecurity will have a positive relationship with economic strain.*
- *H4d – Macroeconomic Employment-related Factor will have a positive relationship with economic strain.*
- *H4e - Macroeconomic Finance-related Factor will have a positive relationship with economic strain.*

H5: Macroeconomic factors will be significantly related to lower levels of perceived income adequacy for needs when controlling for individual level antecedents.

- *H5a– Individual-level Employment-related Factor will have a positive relationship with economic strain.*
- *H5b – Individual-level Finance-related Factor will have a positive relationship with economic strain.*
- *H5c – Job Insecurity will have a positive relationship with economic strain.*
- *H5d – Macroeconomic Employment-related Factor will have a positive relationship with economic strain.*
- *H5e - Macroeconomic Finance-related Factor will have a positive relationship with economic strain.*

CHAPTER TWO

METHODS

Participants

Individual-level. Surveys were mailed to 12,275 union members working for a large retail chain. Two-thousand four-hundred fifty-seven participants responded to the survey via mail, all of whom work in Michigan, a response rate of 20.0%. Responses indicated that the average age was 46.5 years, 51.3% were married, 59.5% were female, average tenure was 15.5 years, and 65.9% were full-time employees.

Demographics of all union members indicate that the respondents to the survey were, on average, older and longer tenured employees than the non-respondents. The response bias by employee age can be summarized by the fact that for each 5-year age group under 40, non-responders outnumbered responders; whereas for each age group over 40 years of age, responders outnumbered non-responders. The results were similar for tenure. Whereas fewer than half of employees with less than 5 years of seniority responded to the survey, those with greater than 5 years of tenure were more likely to respond to the survey than not. A clear response bias also existed for employment status. While more than 60% of the responders were full-time workers, the majority of the non-responders were part-time workers.

Macro-level. Macroeconomic information about the communities in which the employees work was taken from the U.S. Census Bureau's American Community Survey (ACS). The ACS is a nationwide survey designed to provide population and housing information at a community level (U.S. Census Bureau, 2010). In contrast with the decennial Census, the ACS is released each October, with data for the preceding year. The data were estimated from a series of monthly independent samples which are aggregated to provide annual average estimates. The

ACS is conducted primarily via self-response to mailed questionnaires available in both English and Spanish. The sampling of households is determined from the same Census Bureau Master Address File maintained for the decennial Census. There are well documented non-response follow-up procedures, which can involve phone calls and personal visits, to ensure a representative sample is obtained (U.S. Census Bureau, 2010).

Prior to aggregating the macroeconomic variables, the extent of nesting at the group level was assessed. The intraclass correlation coefficient (ICC) values of the macroeconomic variables describe the extent to which the values in each group are similar. Analysis of the ICC2 of the U.S. Census Bureau ACS economic antecedent variables prior to their aggregation to group level indicated a large amount of nesting by PUMA. All ICC2 values were greater than .99. This indicates that there is a meaningful amount of between group variance in the ACS data, justifying the aggregation of the data to the PUMA level.

Measures

Macroeconomic Objective Stressors. The data from the 2008 ACS, released in October 2009, were gathered from the Integrated Public Use Microdata Series (IPUMS) (Ruggles et al., 2010). IPUMS is a project managed by the Minnesota Population Center at the University of Minnesota that provides a standard coding of various Census Bureau samples, including the ACS. The data are managed and maintained in a uniform format to facilitate social and economic research (IPUMS-USA, n.d.). IPUMS provides raw Census information at the person-level for individual researchers to aggregate how they choose.

In general, the sampling design for the ACS is a 1-in-100 random sample of the national population. Because the data is a weighted sample, users of the IPUMS-USA data must make use of weights to produce statistics representative of the population. The person-level weighting

variable (PERWT) is based on the inverse probability of selection into the sample and adjustments for factors, such as the known distribution of the entire population according to age, sex, and race; or oversampling of a particular demographic group (IPUMS-CPS, n.d.). The data collected in the 2008 ACS were the result of thorough content testing of previous ACS instruments, as recently as early 2006. More than thirty Federal agencies participated in the review of the ACS leading to improvements in questions and response categories. The effort developed solutions for high missing data rates, estimates which differed systematically from other sources, or low reliability as measured in a Census 2000 Content Re-interview survey (U.S. Census Bureau, 2008).

The presence of person-level data or "microdata" enables a researcher to aggregate the data in the sample at the level of interest specific to the research question at hand. Data can be analyzed per person, per household, or aggregated to various levels, from local communities, to values for the entire U.S. For this study, data was aggregated at the local community level. A Public Use Microdata Area (PUMA) is the lowest level geographic designation available within the IPUMS data. A single PUMA describes a geographic area of at least 100,000+ people. A PUMA generally follows metropolitan boundaries (Metropolitan Statistical Areas) however, as of the 2000 census and onward, PUMAs do not cross state lines. Therefore, PUMA codes are state dependent and must be read in tandem with the variables representing state (IPUMS-USA, n.d.). There are 2,069 PUMAs in the U.S. and 68 PUMAs in the state of Michigan.

Data for the 2008 ACS survey for all states in the U.S. are a 1-in-100 sample of the population. There were 3,000,657 cases in the dataset representing over 300 million Americans. Data were aggregated from the weighted person-level data to produce measures representative of each unique geographic region. For each PUMA, the aggregate function in SPSS was used to

produce the following measures, representative of macroeconomic factors for each individual geographic region: unemployment rate, weeks and hours worked in the past year, employer-provided health insurance rate, Medicaid and Medicare rates, food-stamp and welfare rates, mortgage payment(s), property taxes and fees, and finally average income from salary/wage, investment, and business/farm.

Macroeconomic Employment-related Antecedents. Data from the 2008 ACS were aggregated from the person level to the PUMA level, providing average statistics differing for each geographical area in which employee worked. In order to approximate BLS labor force statistics, individuals with a group quarters status (3 or 4) indicating residence in college dormitories, military housing, nursing home or a correctional institution were excluded from the analysis. Weeks worked in the past year is an interval measure in which a value of 1 equals 1-13 weeks; 2 is 14-26 weeks; 3 is 27-39 weeks; 4 is 40-47 weeks; 5 is 50-52 weeks. Values of zero (N/A) were replaced with 'blank' before aggregating, in order to assess number of weeks worked, only for those who worked during the year. Usual hours worked per week is a continuous variable. Values of zero were replaced with 'blank' before aggregating, in order to assess work hours for those who worked. (Twenty percent of the ACS had a value of zero = N/A in labor force and employment status.) Unemployment rate was calculated from the percent of individuals with an employment status of 'unemployed' within each PUMA. In addition, rates of people Looking for Work, Available for Work, Not Available for Work due to other responsibilities, or Absent from Work due to layoff or illness were calculated. Food-stamp Recipient Rate is the percentage of people receiving food-stamps in each region. Employer-provided and Medicaid-provided Health Insurance is measured by percentage of people indicating that type of Health Insurance.

Macroeconomic Finance-related Stressors. Each income variable is calculated from the aggregated head of household income (in dollars) for each geographic region. The three primary income variables are Salary/Wage, Investment, and Business/Farm income. Cost of home ownership is represented by two variables 1st Mortgage Payment and 2nd Mortgage Payment. Both are measured in aggregated average dollars. Mortgage payment is two distinct variables in order to determine whether the presence of a second mortgage is an important distinction from the total dollar amount of a mortgage. Property Tax and Condominium Fee are aggregated average dollar amount variables indicative of the cost of home ownership as well.

Each of the 118 store locations from the individual dataset were assigned a PUMA by cross-checking street address, zip code, and county with a table of PUMAs by city and county. A mapping of PUMAs by store zip code was created and each employee was assigned to PUMA by the location of the store in which they work. The stores reside in 30 distinct PUMAs, with the number of stores located within each PUMA ranging between one and six. On average, each PUMA contained 3 stores.

The measures below are responses from the survey of union members working for a large retail chain. As stated above, the 2,457 participants, all of whom work in Michigan, were mapped to a PUMA according to the store in which they work.

Individual Objective Employment-related Antecedents. Work Hours was a continuous measure of average hours an employee worked per week. An employee's Health Insurance Status measured whether they had health insurance through the union contract. Health Insurance Cost measured the weekly insurance rate paid by the employees ($4, $8, or $12) with coverage through the union. For those employees who did not have health insurance through the union contract, coverage via a spouse or relative is measured by Family Health Insurance (0 – No, 1 –

Yes). An employee's spousal work status was measured by the following variables: Spouse works full-time, Spouse works part-time, Spouse is retired, Spouse in unemployed or laid off, and Spouse does not work. All have dichotomous (0 – No, 1 – Yes) values.

Individual Objective Finance-related Antecedents. Weekly Income is calculated from multiplying an employees' pay rate by the average number of hours worked per week; plus average night-shift and Sunday hourly pay adjustments. Percent of Family Income is an interval measure of the percent of one's family income comes from the employees' job. (Response options range from 1 – Less than 10% to 10 – 90% or more.) Estimated Weekly Household Income is calculated from adding Weekly Income to 100% minus the percent of total family income that comes from the employee's job. Family Income is an interval dollar estimate of an employee's pre-tax annual family income. Number of Children measures the number of dependents the employee is parent or guardian to living in the home (0-No children to 5-Five or more children).

Subjective Employment-related Antecedents. Subjective job insecurity was measured with a scale of 4 items developed by De Witte (2000): "I feel insecure about the future of my job;" "I think I might lose my job in the near future;" "Chances are, I will lose my job soon;" "I am sure I can keep my job. (R)" Responses were recorded on a scale ranging from 1-Strongly Disagree to 5-Strongly Agree. Past studies have found the measure to be internally consistent, with a Cronbach's alpha of .87 (Silla, De Cuyper, Gracia, Peiro, & De Witte, 2009). The four-item scale had an alpha of .73 in this sample.

Financial Strain. A total of six items were utilized to measure financial strain. Two items were selected from a factor analysis of a 7-item measure by Sears (2008). Selected items were, "I feel pressured by my financial situation" and "My financial situation is demanding."

The remaining four items were modified from Sears' (2008) measure new items developed for this study (See Appendix B). Responses were recorded on a scale ranging from 1-Strongly Disagree to 5-Strongly Agree. The six-item measure had an alpha of .92.

PIA-Needs. Five items from Sears' (2008) measure Perceived Income Inadequacy for Needs, including "I cannot afford the basic transportation I need." and "I cannot pay my bills on time." Responses were recorded on a scale ranging from 1-Strongly Disagree to 5-Strongly Agree. The five-item measure had an alpha of .82.

PIA-Wants. Four items measuring Perceived Income Inadequacy for Wants were selected from the highest loading from Sears' (2008) factor analysis of a 10-item measure. Items selected include "I cannot afford the household items I want" and "I can afford to save as much money as I choose (R)." Responses were recorded on a scale ranging from 1-Strongly Disagree to 5-Strongly Agree. The four-item measure had an alpha of .79.

Demographic variables. Age, gender, and marital status were measured due to their association in previous studies to economic stress (e.g., Conger et al., 1990; Jackson & Warr, 1984; Zvonkovic, 1988). Age was measured in years, participants were asked to identify themselves as male or female, and marital status was dichotomized as married or single.

Analysis

Descriptive Statistics. Means and standard deviations were reported for each of the stressor variables at both levels. Subsequent to the factor analyses described below, reliabilities will be calculated for the each of the finalized dimensions of stressor and strain measures.

Correlational Analyses. Pearson correlational analysis was used to initially assess the relationships between stressors, at both levels, and strains. In order to account for both the within and between groups covariance of the multilevel structure, two sets of correlational

analysis were performed. Correlations were analyzed for both grand mean centered and group mean centered level 1 predictors. Correlations with grand mean centered variables do not distinguish within group from between group relationships at level 1, but provide an estimate of the overall relationship between variables (Kreft & De Leeuw, 1998). In contrast, group mean centered variables at level 1 account exclusively for the within group variance and the relationship with other indicators.

Multilevel Confirmatory Factor Analysis. I hypothesized that the multilevel objective antecedents of economic stress can be divided into employment and finance-related dimensions. The validity of a four-factor solution will be tested via confirmatory factor analysis in EQS. In order to control for the effect of group membership on the individual-level variables, level 1 indicators were group mean centered. By group mean centering, the factor analysis will examine only within group differences at level 1. Any between group differences should be accounted for by the factor analysis of level 2 indicators.

Multilevel Analysis. Hierarchical linear modeling (HLM), or Mixed Modeling in SPSS, enables a multi-level analysis of economic stress. The relationship between economic antecedent factors and the criterion variables was assessed with three separate analyses regressing on the criterion variables of financial strain, PIA for needs, and PIA for wants.

The intra-class correlation (ICC) is a measure of the degree of dependence of individuals within a group (Kreft & De Leuuw, 1998). The degree of dependence is important because it changes the assumption that error variance is unrelated. In a study in which individuals share a geographic or work context, the relationship between unmeasured variables may be more than zero. Thus, it is important estimate the extent of the shared variance. The ICC assesses the degree of covariance in the error terms of individuals within a group.

Multi-level models assume that the slope of the individual outcome variable depends linearly on the group variable(s) (Bryk & Raudenbush, 1992). The level 2 grouping variable (PUMA) as well as level 1 and level 2 predictors were entered into the model. The level 1 slope and intercept was predicted based on the level 2 variables being entered as random effects. All level 1 predictor variables were grand mean centered.

In SPSS, the mixed models-linear analysis was selected, with subjects grouped by PUMA. The tests of main effects for each of the factors on each of the measures of economic strain were reported. The statistical significance of each main effect was determined by the *t*-value of the fixed effects. The level of the economic strain criterion at average levels of each factor will be indicated by the intercept. The size of the effect of each factor is indicated by the reduction in error variance.

The statistical significance of the direct effects of the level 2 factors was tested while controlling for level 1 factors. Individual level factors will be entered as random effects in the mixed model. A significant *t*-value will indicate a significant effect of a macroeconomic factor on a criterion of economic strain.

CHAPTER THREE

RESULTS

Nesting of Indicators by Group Membership

Prior to performing a multilevel CFA, it is advisable to assess the extent of between group nesting of the individual economic antecedents in order to justify multilevel assessment. To judge the nesting between groups relative to within groups, the ICC1 and ICC2 were calculated for each predictor. ICC1 describes the percent of variance at level 2. The ICC1 values are provided in Table 11. The ICC2 can be thought of as a measure of the reliability of the nesting of the indicator at level 2. The results indicated mixed results for employment-related variables. Health Insurance Status (.61), Work Hours (.51), Family-provided Health Insurance (.51), Spouse works full-time (.37) had the highest ICC2 values. The ICC2 values of Spouse works part-time (.26), Health Insurance Cost (.18), Spouse is unemployed or laid off (.00), Spouse does not work (-.11), and Spouse is retired (-.18) indicate a lack of group level variation. The results of ICC2 calculation for finance-related variables were: Calculated Weekly Income (.60), Annual Family Income (.55), Percent of Family Income Earned (.52), Calculated Weekly Family Income (.51), and Number of Children (.10). Although, the ICC values indicate some nesting within groups, overall the values are relatively low to justify a multilevel approach.

The ICCs of the criterion variables also indicate that there is little to no nesting at the PUMA level for our sample. All three criterion variables have less than 1% of their total variance between groups. Financial strain had an ICC1 of < .01 and ICC2 of .21; PIA-needs had an ICC1 of < .01 and ICC2 of .36; and PIA-wants had an ICC1 of < .01 and ICC2 of .09. Given the low ICC values, finding group-level effects on perceptions of economic stress is extremely unlikely. Furthermore, if group level effects were found, the effect size would be trivially small.

Thus, despite the presence of evidence of factors in the PUMA-level indicators, the lack of between groups variance in the criterion variables precludes the likely presence of level 2 effects.

Correlational Analyses

The suspected lack of level 2 effects on economic stress was confirmed by the correlational analysis. Pearson correlations between PUMA-level indicators and individual perceptions of economic stress were nearly all zero. Only two significant relationships were found. Average weeks worked was positively related to economic strain and inadequacy of income to meet needs. These relationships were in the opposite direction expected (Table 4).

Correlational analysis of the relationship between individual antecedents and perceptions of economic stress also confirmed the fact that between group variance is extremely small. Analyses of the relationships between individual antecedents and perceptions of economic stress were virtually identical for both non-mean centered indicators (Tables 5 & 7) and group mean centered indicators (Tables 6 & 8). Nearly all measures of economic antecedents demonstrate a relationship to one or more of economic stress criterion measures, warranting further investigation of, at the very least, the individual level relationships between economic antecedents and perceptions of economic stress.

Multilevel Confirmatory Factor Analysis

The multilevel confirmatory factor analysis, simultaneously testing the presence of individual- and PUMA-level factors did not provide definitive results. The fact that only 30 groups of at least 15 employees are in the sample in addition to limited levels of nesting of indicators by group can pose problems for convergence of the multilevel CFA. The multilevel CFA analysis for the between-group analysis of individual-level indicators resulted in low loadings, high cross-loadings, or higher error covariances for many of the indicators. Indicators

were eliminated in order to address these issues. The resultant multilevel CFA model provided evidence of a two-factor solution for macroeconomic indicators (H2) however, evidence for a hypothesized (H1) two-factor solution at the individual level was inconclusive. Hence, I conducted a second CFA focusing on the individual (level 1) antecedents of economic stress. Nonetheless, the results of the multilevel CFA are reported below.

The multilevel factor model demonstrated the hypothesized (H2) a two-factor structure of macroeconomic indicators. The multilevel model had a Chi-square of 174.8, $p < .001$, a CFI = .97, and RMSEA of .04, as shown in Table 9. Four indicators comprised the macroeconomic employment factor (loadings in parentheses): Food-stamp Rate (.98), Medicaid Rate (.98), Employer-provided Health Insurance Rate (-.93), and Unemployment Rate (.82). Four indicators comprised the macroeconomic financial factor: Wage Income (.95), 1st Mortgage (.94), Business Income (.94), and Investment Income (.71). These results provide support for the hypothesized (H2) employment-related and finance-related factor structure (Table 10).

As mentioned above, the multilevel CFA is not likely to provide a sufficient analysis of the individual (level 1) economic antecedent factor structure H1. The ICCs indicate a lack of between group variance in comparison to within group variance (Table 11). Within the multilevel CFA, only two individual economic indicators loaded on each factor. While the fit statistics described above indicate a good fitting model, the 1.00 loading of one of the individual economic items indicating a zero error variance as well as a perfect negative correlation (-1.00) between the two individual level factors are potentially problematic. These findings are likely the combined result of limited between-group variance (compared to within group variance) and the small number of groups. The testing of alternative models (one L2 factor & two L1 factors,

two L2 factors & one L1 factor; one L2 factor & one L2 factor) did not improve the model fit. As a result, additional testing of H1 is necessary via a separate single-level CFA.

Single-level Confirmatory Factor Analysis

In order to focus exclusively on the within group variation and eliminate the small between group variance from the analysis, group mean centered individual level variables were analyzed in a single level CFA. The CFA indicated a two-factor structure of individual economic antecedents. In accordance with H1, the factors can be described as employment-related and finance-related. Indicators with extremely low loadings (less than .30) or evidence of significant complex loadings according to the Lagrange Multiplier (LM) test were eliminated. The result was a 3-item employment-related factor and a 2-item finance-related factor. The CFA resulted in a chi-square of 56.49, $p < .001$. The fit statistics indicate a good factor structure in which CFI = .98 and RMSEA = .08 (Table 6). The items (loadings in parentheses) comprising the employment factor were Work Hours (.83), Tenure (.69), and Health Insurance Status (.63). The finance factor items (loadings) were Family Income (.96) and Spousal Full-Time Employment Status (.51). Although significantly related, the correlation of the factors (.35) indicates sufficient independence (Table 12).

From the results of the CFA, composite indicators were formed to represent the factors. Standardized values of each indicator (z-scores) were utilized to eliminate scale differences. The Cronbach's alpha measure of internal consistency for the three-item employment factor was .76 and for the two-item finance factor was .66 (Table 12). The five-item scale of job insecurity had an alpha of .73. The financial strain scale had an alpha of .92. The perceived income adequacy scales for wants and needs had alphas of .79 and .82, respectively.

Mixed Model Analysis

Hypothesis 3 concerned the relationship between both individual-level and macroeconomic antecedents and perceptions of financial strain. A mixed model analysis tested these relationships, as shown in Table 12, providing only partial support for the hypothesis. The average financial strain, weighted per PUMA was 3.49, as indicated by the model intercept. A significant amount of within PUMA variance was found, as indicated by the significant residual estimate of .97. The intercept variance (Wald-Z = .54, p = .59), was non-significant, indicating a lack of between PUMA variance in financial strain.

Hypothesis 3a concerns testing of the relationship between individual-level employment-related factor and financial strain. A one standard deviation increase in the employment resource factor is associated with a .11 decrease in financial strain. The reduction of the residual estimate indicates that the employment factor explains 1% of the within group variance in financial strain, providing support for H3a. Neither the mean level of financial strain nor the slope of the relationship between the employment factor and financial strain varied significantly by group.

The addition of the individual financial factor to the model indicated a significant negative relationship with financial strain, over and above the effect of the employment factor. The results, in support of H3b, show that a one standard deviation increase in the financial resource factor is associated with a .15 decrease in financial strain. The financial factor explains 2% of the within group variance in financial strain. Neither the mean level of financial strain nor the slope of the relationship between the financial factor and financial strain varied significantly by group.

As hypothesized (H3c), relationship between job insecurity on financial strain was significant. Controlling for the effect of the individual employment and financial factors, a one

unit increase in job insecurity is associated with a .29 increase in financial strain. Job insecurity explains an additional 5% of the within group variance in financial strain. Neither the mean level of financial strain nor the slope of the relationship between job insecurity and financial strain varied significantly by group. However, Hypothesis 3 was not fully supported. The macroeconomic employment-related and finance-related factors were not related to financial strain when controlling for the individual-level antecedents, failing to support H3d and H3e, respectively.

Hypothesis 4 concerns the relationship between economic antecedents and perceived income inadequacy for wants. A mixed model analysis was used, as shown in Table 14. The average PIA for wants, weighted per PUMA was 3.57, as indicated by the model intercept. A significant amount of within PUMA variance was found, as indicated by the significant residual estimate of .86. The intercept variance (Wald-Z = .01, p = .99) was non-significant, indicating a lack of between PUMA variance in PIA for wants.

Testing for the relationship between individual economic factors on PIA for wants began with the employment-related factor. A one standard deviation increase in the employment factor was associated with a .15 decrease in income inadequacy for wants, providing support for H4a. The reduction of the residual estimate indicates that the employment factor explains 2% of the within group variance in PIA for wants. Neither the mean level of PIA for wants nor the slope of the relationship between the employment factor and PIA for wants varied significantly by group.

The addition of the individual financial factor to the model indicated a significant negative relationship with PIA for wants, over and above the effect of the employment factor, supporting H4b. The results show that a one standard deviation increase in the financial factor is associated with a .15 decrease in income inadequacy for wants. The financial factor explains 2%

of the within group variance in PIA for wants. Neither, the mean level of PIA for wants nor the slope of the relationship between the financial factor and PIA for wants varied significantly by group.

The fixed effect of job insecurity on PIA for wants is significant, supporting H4c. Controlling for the effect of the individual employment and financial factors, a one unit increase in job insecurity is associated with a .22 increase in income inadequacy for wants. Job insecurity explains an additional 3% of the within group variance in PIA for wants. Neither, the mean level of PIA for wants nor, the slope of the relationship between job insecurity and PIA for wants, varied significantly by group. However, Hypothesis 4 was not fully supported. The macroeconomic employment-related and finance-related factors were not related to PIA for wants when controlling for the individual-level antecedents, failing to support H4d and H4e, respectively.

Hypothesis 5 concerned the relationship between economic indicators and PIA for needs (Table 15). The average PIA for needs, weighted per PUMA was 2.50, as indicated by the model intercept. A significant amount of within PUMA variance was found, as indicated by the significant residual estimate of .74. The intercept variance (Wald-Z = 1.04, p = .30) was non-significant, indicating a lack of between PUMA variance in PIA for needs.

Testing for the effect of individual economic factors on PIA for needs begins with the employment-related factor. A one standard deviation increase in the employment factor is associated with a .21 decrease in income inadequacy for needs, supporting H5a. The reduction of the residual estimate indicates that the employment factor explains 4% of the within group variance in PIA for needs. Neither the mean level of PIA for needs nor the slope of the relationship between the employment factor and PIA for needs varied significantly by group.

In support of H5b, the addition of the individual financial factor to the model indicated a significant relationship with PIA for needs, over and above the effect of the employment factor. The results show that a one standard deviation increase in the financial factor was associated with a .23 change in income inadequacy for needs. The financial factor explains 6% of the within group variance in PIA for needs. Neither the mean level of PIA for needs nor the slope of the relationship between the financial factor and PIA for needs varied significantly by group.

The fixed effect of job insecurity on PIA for needs is significant, supporting H5c. Controlling for the effect of the individual employment and financial factors, a one unit increase in job insecurity is associated with a .27 increase in income inadequacy for needs. Job insecurity explains an additional 6% of the within group variance in PIA for needs. Neither the mean level of PIA for needs nor the slope of the relationship between job insecurity and PIA for needs varied significantly by group. However, Hypothesis 5 was not fully supported. The macroeconomic employment-related and finance-related factors were not related to income inadequacy for needs when controlling for the individual-level antecedents, failing to support H5d and H5e, respectively.

The within group effect sizes can be verified via OLS regression analysis of the relationship between group mean centered predictors and economic stress criterion. Identical to the mixed model results, the overall effect sizes (R-square) for the models with employment factor, finance factor, and job insecurity predicting within group variance were .08 for financial strain, .07 for PIA for wants, and.15 for PIA for needs (Table 16).

Overall, individual-level antecedent factors of economic stress were significantly related to both the cognitive (income adequacy) dimension of economic stress as well as the affective

(financial strain) dimension. The factors comprised of macroeconomic indicators were not related to either dimension of economic stress.

CHAPTER FOUR

DISCUSSION

Given the tenuous state of the global economy, the study of economic stress is particularly relevant today. In order to take a preventative approach to addressing perceptions of economic stress facing individuals, families and communities, the precursors of stress perceptions must be better understood. The goals of this study included testing a theoretical model of the factors that lead to economic stress, as well as examining the relationship between these economic factors with three dimensions of economic stress.

This study evaluated the factor structure of both objective individual-level and macroeconomic-level antecedents to economic stress. Overall, evidence of distinct finance-related and employment-related factors was found at both levels. Furthermore, objective individual-level factors and subjective perceptions of job insecurity were significantly related to cognitive and affective dimensions of economic stress. The results confirm that a relationship between objective measures of aspects of an employee's employment relationship and household financial situation influence subjective perceptions of economic stress. This research is a first step in the study and measurement of preconditions of economic stress. As a result of increased knowledge of the precursors of economic stress, organizational and public policy interventions can be designed to address the conditions that place individuals and families at a high risk.

The confirmatory factor analysis results supported Hypothesis 1, providing evidence for the theorized (Voydanoff, 1990) dimensions of individual employment and financial economic stressors. Factor analytic results also provided support for Hypothesis 2, indicating that economic indicators at the local community level also fall into employment- and finance-related factors. These related, yet distinct factors describe an important distinction between the

importance of maintaining employment-related resources as well as the resources associated with meeting one's household financial obligations. There are implications of this distinction between employment and financial influences on economic stress for both organizations and families. From an organizational perspective, it might appear that a simple solution to economic stress would be increased income. However, the factor structure indicates that aspects of employment, such as affordable health care, tenure with the organization, and opportunity to work additional hours when desired may be less costly remedies for economic stress than the need to increase hourly wages.

Partial support was found for the remaining hypotheses (H3, H4, & H5), which tested the effects of the employment and financial factors at both levels on dimensions of individual perceptions of economic stress. For all three dimensions of economic stress, financial strain, income adequacy for wants, and income adequacy for needs, the individual-level factors were significantly related to stress perceptions. The results also indicated that objective measures of one's individual employment and financial situation affect perceptions of economic stress. Specifically, qualities of one's employment, such as tenure with an organization, hours worked, and receipt of health insurance benefits were associated with economic stress perceptions. In addition, objective indicators of one's household financial situation, such as family income and presence of a working spouse had an effect on an employee's level of economic stress. Furthermore, the financial effects proved distinct from those aforementioned employment-related indicator effects. Objective economic indicators were also found to have effects distinct from a subjective indicator of employment, perceptions of job insecurity.

However, no evidence was found for hypothesized level 2 effects. The macroeconomic factors were not related to economic stress perceptions, nor was there evidence of any cross-level

moderating effects. Overall the results provide some support for a typology of economic stress antecedents that discriminates between objective and subjective indicators of one's economic situation, as well as employment and financial antecedents. Additional study of economic stress is warranted to discern how the levels of economic antecedents fit together, as well as better understand the interrelationship between objective and subjective indicators at an individual level.

Implications

The results provide support for the application of COR theory (Hobfoll, 1989) to the study of economic stress. Individual employment and financial factors represent objective resources at an employee's disposal. The findings indicate that a lack of employment or financial resources leads to higher levels of economic stress. The implications of these findings can be valuable to inform stress prevention efforts. From an individual perspective, the presence of dual-income in a family is important for stress prevention. However, in order to appreciate the benefits of additional family income, those with employees with young children require access to childcare resources. Future studies should consider the role of this and other similar potential constraints on family financial resources.

The findings also have implications for organizations. The association between the employment resources and economic stress implies that organizations can take a preventative approach by providing benefits such as low cost health insurance. In addition, organizations that seek to retain employees are likely to find that these longer tenured employees experience less economic stress. Employees who perceive the possibility of long-term employment with sufficient benefits experience less stress regarding their economic situation.

The employment and financial factors, as representative of an individual's resources were found to predict economic stress, even upon controlling for job insecurity. The finding that job security operated as a significant subjective threat to one's economic situation demonstrates not only the unique effects of objective and subjective antecedents, but provides support for the implication that the potential for long-term employment can prevent economic strain. As COR theory proposes, the presence of a perceived threat to one's resources, such as job insecurity is associated with increased individual stress perceptions. Thus, as hypothesized, it is important to measure both subjective and objective antecedents of economic stress. Future research has the potential provide additional information regarding their interrelationships. Many studies of job security have made a convincing case that it be treated as a stressor, or cause of stress perceptions (e.g., Probst, 2005). However, there has been little study regarding its relationship with other stressors, such as the objective economic measures. Future study may address the order of causality between the objective and subjective antecedents of economic stress, or whether they truly have independent effects on strain, as modeled in this study.

The hypothesized contextual effects relative to local community economic indicators were not found. At least for the current sample, perceptions of economic stress did not differ by one's community. There are a few potential explanations for the lack of contextual effects. One possibility is that local economic distinctions are at too high a level to capture, for example, the socio-economic status of employees that may be indicative of the extent to which economic stress is a concern. A contrasting explanation for the lack of community level effects is that in the current context of global economic crisis, local economic distinctions are far less important than higher level indicators. In the face of worldwide job loss and wage reduction, individuals may attend less to community indicators of economic context and pay greater attention to

statewide, national, and global economic conditions. According to COR theory, when confronted with an unambiguous salient stressor, such as a global economic crisis, individuals' appraisals of that stressor may be very consistent (Hobfoll & Shirom, 2001). Thus, irrespective of the immediate local economic conditions, knowledge of a persistent, far-reaching economic crisis may reduce the variation in economic stress between regions. Regardless of differences in local macroeconomic indicators, times of severe economic crisis may threaten all communities relatively equally.

It is important to note that the lack of macroeconomic findings is not due to a lack of community level variance in economic indicators. Analysis of the grouping of the American Community Survey data by geographic region (PUMA) showed that the macroeconomic variables were, in fact, clustered by region. In other words, the nesting of economic indicators by local community was sufficient to warrant aggregating the data to level 2. However, I found no evidence of an effect of these differences on individual perceptions of economic stress.

Another potential explanation for the lack of local economic effects on perceptions of stress was the relatively small number of groups in our sample. Although the small number of distinct geographic regions did have an acceptable degree of variation on many of the economic indicators, all of the geographic groups were from a single state in the U.S. Perhaps a study with a greater number of communities represented as well as sampling a larger portion of the U.S. would provide different results.

Strengths & Limitations

A strength of this study is the use of objective measures of employment and financial indicators at both the individual and community level. Past research supports the notion that employees compare their level of pay and benefits to subjective assessments of the cost of

meeting their economic needs (Taylor & Vest; 1992; Williams, 1995), however the majority of past studies have relied on subjective measurement of satisfaction with pay and benefits. The use of objective measures of economic antecedents may help to avoid the problems associated with common method bias. The use of subjective measures for the assessment of both economic stressors and strains has the potential to inflate the estimated relationship between the constructs due to the consistency of measurement technique, described as common method variance. The presence systematic measurement variance between constructs results in common method bias (Doty & Glick, 1998).

Another strength of this study was the multilevel approach to economic stress. Although no group level effects on economic stress were found, by describing the ratio of between-group variance relative and total variance, an understanding of the extent to which the variance of economic stress was attributable to differences between communities was possible. The degree of group-level nesting within the data (ICC < .01) was insufficient to detect group level effects. Muthen (1997) provides a rule of thumb suggesting an ICC of at least .1 to continue with multilevel analysis (Byrne, 2006). Although the inclusion of macroeconomic measures had the potential to extend knowledge of the effects of higher level economic indicators on individual employee's well-being, the lack of between-group variation in economic stress perceptions within the sample precluded the presence of meaningful findings. A sample with a larger number of groups or a more randomized group selection representative of the entire U.S. population may have provided more potential to find the hypothesized macroeconomic effects.

It is unclear whether the economic stress perceptions of a sample of union employees are fundamentally different from other workers. The protection of pay and benefits associated with union membership may, in general, decrease perceptions of economic stress compared to other

workers. However, this potential limitation can also be interpreted as a variable likely to decrease the size of the effects in this study. Thus, studying economic stress with union employees may be a conservative approach. The effect sizes for the significant relationships found in this sample may prove to be larger in non-union samples. However, it may also be the case that union employees are quantitatively different from non-union employees. Rather than constituting a conservative approach, the findings for non-union employees would be fundamentally different. Additional research is necessary to determine the differences in the experience of economic stress, if any, between union and non-union employees.

Overall, the findings support the theoretical factor model in which objective measures of an individual's financial and employment situation manifest themselves in perceptions of economic stress. In accordance with COR theory, the experience of stress is related to a perceived shortage of an employment or financial resources, or a threat to those resources, such as job insecurity. These findings demonstrate the importance of employment sufficient to meet the needs of a young family, including employer-provided health benefits. The combination of inadequate hours as well as a lack of health benefits may result in worries about making ends meet. In addition, the independent effect of the financial factor including additional family income demonstrates that for many employees a single income is insufficient to stave off perceptions of economic stress. Previous research has provided evidence regarding the detrimental effects of job insecurity on health outcomes (Ferrie et al., 2001). However, the relationship of job insecurity to objective economic stressors, economic stress, and health is not well defined. By identifying stressors that operate independently from job insecurity and are also associated with economic stress, economic stress literature is one step closer to determining

the exact nature of the relationship between job security and economic stress. However, the effect of union membership on these findings remains unclear.

This research also provides insight into the distinct dimensions of economic stress. The overall relationships between the antecedents of economic stress and each dimension of economic strain were the same. However, when comparing effect sizes, the individual objective employment and financial factors had an effect size of nearly twice as large on perceived income adequacy for needs as on income for wants or financial strain. Thus, whether or not an economic stressor can be linked to an affective measure of financial strain or the ability to fulfill one's wants, perhaps the ability to identify those individuals who struggle to meet their basic needs is the most important dimension to identify, at least in the short-term. It is possible that there are many more exogenous variables that predict whether economic stressors result in affective perceptions of strain or whether economic circumstances are able to fulfill one's wants than the ability to meet the basic needs for survival. For example, individual differences in lifestyle preferences and expectations may explain more of the variation in fulfillment of people's wants and affective perceptions of their financial situation, whereas fulfillment of needs may be less influenced by individual preferences and subjective expectations.

The results of this study may be particularly relevant to hourly wage employees, such as the retail workers that comprise this sample. The properties of one's employment and financial situation that were found to be related to stress perceptions are those properties often associated with the economic struggles of hourly wage workers. Employment indicators such as hours worked are important as economic indicators, principally of the sufficiency of one's employment to meet one's needs. Because the ability to make a living wage can depend on working sufficient hours, an hourly employee scheduled to work fewer hours than desired or expected is likely to

experience strain associated with meeting financial needs. In addition, eligibility for and receipt of health benefits is a core element of a sufficient employment relationship. As a whole, the employment-related economic indicators, (work hours, health benefits, and tenure) had a larger influence on the financial needs-based dimension of economic strain than on either the wants-based dimension or the affective assessment of financial strain. Thus, properties of one's employment, independent from job security and family income, can affect the ability to meet financial obligations.

The effects of these elements of employment were distinct from those of the financial factor. Total family income as well as the presence of a spouse who worked full time was also associated with lower levels of economic strain. As an hourly employee, particularly with limited work hours or a lack of health benefits, it may important for one's income to be supplemented by a working spouse. The effect of the financial economic antecedent factor indicates the importance of total family income and importance of a spouse who works full-time to levels of economic stress.

Finally, the relationship between job insecurity and economic strain indicates that this subjective measure of the future sustainability of one's employment and income operates similarly, but independently of the objective indicators of one's employment and financial situation. Models of economic strain should continue to distinguish between subjective and objective economic indicators, seeking to better understand not only their independent effects, but the relationship between the two types of economic indicators.

Future Directions

As previously described, future research should investigate relationships between economic variables and economic stress in non-union employees. Due to a few fundamental

differences in the assumptions of employer-employee relationships for union employees compared to non-union, such as contractually negotiated pay, job security, and benefits, it is important for research to be done within non-union populations. Studies of non-union employees may find larger effects for the predictors of economic stress in this study. For example, union contracts that negotiate more affordable health benefits, higher hourly wages, and higher levels of job security compared with non-union employees may restrict the range of these indicators, attenuating the effects on economic stress.

In addition, further investigation of the effect of macroeconomic context on economic stress should study employees from a greater number of economically diverse areas. The study of macroeconomic effect from a randomly selected national population of communities would be ideal. The study of a greater number of communities would help to clarify whether or not one's local setting has any impact on individual perceptions of economic stress. In addition, studies at higher levels than PUMA may provide different results as well. For example, the U.S. Census Bureau also distinguishes between geographic areas by Metropolitan Statistical Area (MSA; IPUMS, n.d.). MSAs are counties, or combinations of counties centering on a large metropolitan areas, that may or may not cross state boundaries. The MSA designation may be valuable to compare multiple urban and suburban areas across the U.S. An advantage of a geographical grouping such as MSA is the ability control for the metropolitan or rural nature of an area.

Previous research has shown that unemployment in urban and rural areas can affect individuals differently. For example, a study by Gore (1978) found that, although duration of unemployment and economic deprivation did not differ between a sample of rural and unemployed individuals, the rural unemployed experienced greater levels of social support, related to fewer stress-related health symptoms. MSAs were not used in this study due to the

small number of MSAs in this sample as well as the large number of MSAs that are only partially identified in the 2008 ACS data. The census bureau cautions that the identified portion of metropolitan data is representative of the area as a whole; some MSAs are under-represented in the sample by as much as 60% (IPUMS-USA, n.d.). Perhaps future studies can find methods to work around this missing data, or future samples will be more complete.

Gauging the importance of household income to levels of economic stress is of particular importance given the fact that approximately 40 million Americans live at or below the poverty level (DeNavas-Walt et al., 2009). In a time when median household incomes and employee wage shares of corporate profits continue to fall, it is important to continue to quantify the effects of employment and financial indicators on levels of stress. In large part, longitudinal studies focusing on the effects of economic conditions can provide a better understanding of the long-term consequences of economic stress. For example, as aggregate decreases in income are documented, the likely effect of changing employment conditions, including shrinking wages can be assessed by measuring the objective and subjective predictors of economic stress for those whose wages are shrinking. Longitudinal studies can shed light on the presumed causality of these economic indicators, as well as provide an opportunity to test moderators of the relationship between economic conditions and stress. By seeing the effect of moderators over time, informed decisions regarding effective interventions can be employed and tested further.

Potential moderators also include measures of individual differences. Similar to the findings of occupational stress studies, future research of economic stress may reveal that the stressful effects of economic conditions depend largely on the traits of individual employees. For example, the trait of self-esteem has been found buffer the effects of occupational stressors

(Ganster & Schaubroeck, 1995); similar potential buffering qualities of dispositional traits should be explored in the study of economic stress, as well.

There is also an opportunity for future research to shed additional light on the dimensionality of economic stress. In particular, the exploration of differential influences on the adequacy of income for needs, adequacy for wants, and perceptions of financial strain is of interest. Interestingly, these differences may be attributable to concepts similar to the income-reference hypothesis, in which individuals perceive the adequacy of financial resources relative to a comparison others (Boyce, Brown, & Moore, 2010). Boyce and colleagues found that one's income rank within a social reference-group was related to ratings of life satisfaction, whereas an absolute measure of income was not. The researchers also found that upward income comparisons were weighed more heavily than downward comparisons. In other words, perceived lack of income relative to a more wealthy comparison group had a greater effect on life satisfaction than (downward) comparisons to those whom one's resources exceeded. Future studies should attempt to employ the multilevel study of economic stress with this finding in mind. As a complement to raw dollar-amount, objective measures of income, per se, the measurement of income relative to others may provide additional insight. For example, one's rank-order income relative to a higher level group (e.g., department, location, organization, or community) may have a greater effect than one's income in dollars. By measuring rank within a comparison group, the effect of a measure of relative deprivation can be assessed for its effect on economic strain measures such as adequacy of income relative to wants or needs, as well as the effect on affective perceptions of financial strain.

This study is one of many small steps necessary to bring together knowledge from the fields of sociology, economics, and psychology to answer questions regarding the threats posed

by an economic crisis. I hope that future research can continue to uncover relationships between employment- and finance-related indicators and psychological processes associated with affective, cognitive, and behavioral reactions to one's economic circumstances. With additional research on the precursors of economic strain, paired with continued Occupational Health Psychology research on the implications of economic strain on employee well-being, economic stress interventions can be developed. The inclusion of additional employment and financial stressors studied less frequently in the OHP literature, (e.g., health benefits, family income, etc.) will lead to more comprehensive models of economic stress and health. Further exploration of the COR theory in an economic context will enable a better understanding of the severity of each potential threat to individual resources and the associated effects on well-being. Although, previous research has often relied on comparisons of unemployed and employed samples, future research should avoid dichotomous characterization of employment status. Instead, by measuring stressors that describe aspects of one's employment situation, employment related stressors can be measured along a continuum. Thus, employment can be measured along a continuum of its adequacy (Dooley et al., 2000). The measurement of a variety of employment-related stressors will allow researchers to model the effects of underemployment and insufficient employment on perceptions of economic stress. For example, by quantifying the threat to the health of the working poor posed by stressors such as low wages, lack of access to healthcare coverage, paid leave, and child care services (Heymann, Boynton-Jarrett, Carter, Bond, & Gallinsky, 2002) we can better estimate the unique effects of each stressor as well as the overall severity of the problem posed by economic stress.

Conclusions

Economic stress is a very real concern for employees, particularly in today's economic climate. Research on economic stress has primarily focused on outcomes associated with stress perceptions. In order to better understand the precursors to stress-related outcomes, this study sought to shed light on the antecedents of economic stress. Past research in this area has demonstrated the relationship between subjective indicators of the employment relationship, focusing on stressors such as job insecurity. Relatively little attention has been focused on objective descriptors of the employee economic experience, including both employment and finance related antecedents of economic stress. I hope that this study has provided a window to the factors that lead to economic stress and will lead to future research focused on alleviating the negative impact of economic stress on individuals and communities.

APPENDICES

Appendix A

Economic Strain Measures

Financial Strain
I feel pressured by my financial situation.*
My financial situation is demanding.*
I frequently worry about money.
My financial situation makes me anxious.
My financial situation is frustrating.

PIA-Needs
I cannot afford my mortgage or my rent. (R)*
I cannot afford the food I need. (R)*
I cannot afford the basic transportation I need. (R)*
I can afford to pay my utilities (heat, electric, etc).*
I cannot pay my bills on time. (R)*

PIA-Wants
I cannot afford the household items I want. (R)*
I can afford to save as much money as I choose. *
I have extra money for unexpected expenses. *
I can vacation where I want. *

* Items from Sears (2008).

(R) Reverse-scored items.

Appendix B

Tables

Table 1.

Participant Characteristics

Participants	*N*	Mean Age (Years)	% Married	% Female	Mean Tenure (Years)	% Full-time Employees
All Participants	2,457	46.5	51.3%	59.5%	15.6	65.9%
By Demographic Group						
Female Employees	1,463	48.2	53.6%	--	14.3	64.9%
Male Employees	981	44.0	47.6%	--	17.5	66.8%
No Children at Home	1,475	45.6	38.0%	54.3%	15.2	62.4%
One or More Children at Home	890	48.1	73.0%	69.7%	12.0	71.1%

Notes.

The sum of the number of participants within demographic groupings does not equal the total number of participants due to missing data in the gender (13) and number of children (92) variables.

Table 2.

Aggregated PUMA Characteristics for the State of Michigan

Variables	*N*	Mean	Minimum Value	Maximum Value	Std. Deviation
Hours Worked	68	37.6	35.2	39.6	.99
Unemployment Rate	68	.10	.04	.29	.05
Food-stamp Recipient Rate	68	.17	.02	.53	.12
Employer-prov. Health Ins.	68	.63	.28	.81	.11
Medicaid Health Ins.	68	.16	.03	.46	.10
Salary/Wage Income	68	$36,234	$23,858	$80,141	$9,746
Investment Income	68	$8,688	$1,933	$23,457	$3,767
Business/Farm Income	68	$23,434	$8,497	$53,982	$8,327
1st Mortgage Payment	68	$1,001	$558	$2,038	$272
2nd Mortgage Payment	68	$331	$157	$673	$85
Annual Property Tax	68	$415	$250	$713	$102
Condominium Fee	68	$214	$30	$1210	$161

Table 3.

Aggregated PUMA Characteristics for the U.S.

Variables	*N*	Mean	Minimum Value	Maximum Value	Std. Deviation
Hours Worked	2069	38.8	33.3	46.0	1.22
Unemployment Rate	2069	.06	.01	.29	.03
Food-stamp Recipient Rate	2069	.10	.00	.53	.07
Employer-prov. Health Ins.	2069	.59	.19	.84	.11
Medicaid Health Ins.	2069	.09	.01	.48	.06
Salary/Wage Income	2069	$39,934	$20,047	$131,719	$12,705
Investment Income	2069	$11,747	$1,580	$50,777	$6,002
Business/Farm Income	2069	$30,021	$6,902	$124,945	$11,579
1st Mortgage Payment	2069	$1,269	$497	$3,648	$515
2nd Mortgage Payment	2068	$446	$130	$2,781	$174
Annual Property Tax	2069	$405	$48	$794	$158
Condominium Fee	1985	$259	$4	$1400	$162

Table 4.

Descriptives & Bivariate Correlations for Macroeconomic Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Weeks worked	5.06	0.11	--															
2. Hours worked	38.18	0.92	.68**	--														
3. Unempl. Rate	0.08	0.02	-.19**	-.34**	--													
4. Foodstamp Rate	0.09	0.06	-.18**	-.26**	.80**	--												
5. Empl. Health Ins.	0.71	0.06	.26**	.31**	-.75**	-.90**	--											
6. Medicaid Rate	0.10	0.05	-.20**	-.30**	.79**	.96**	-.91**	--										
7. 1st Mortgage	1,232.38	268.91	-.05*	.35**	-.70**	-.73**	.63**	-.75**	--									
8. 2nd Mortgage	366.73	99.24	-.36**	.01	-.31**	-.37**	.23**	-.39**	.78**	--								
9. Property Tax	41.96	7.01	-.11**	.20**	-.65**	-.66**	.48**	-.65**	.90**	.70**	--							
10. Condo Fee	203.21	121.98	-.21**	-.11**	.31**	.21**	-.44**	.32**	-.03	.12**	.17**	--						
11. Wage Income	44,526.38	10,540.09	.17**	.49**	-.66**	-.64**	.55**	-.65**	.90**	.69**	.81**	-.01	--					
12. Business Income	26,409.73	9,126.48	-.06**	.17**	-.35**	-.29**	.18**	-.32**	.61**	.69**	.58**	-.05**	.72**	--				
13. Investment Income	9,651.58	3,991.58	-.28**	.12**	-.36**	-.25**	.09**	-.24**	.70**	.80**	.67**	.26**	.72**	.64**	--			
14. Financial Strain	3.49	0.98	.06**	.04	-.01	-.02	.03	-.01	-.01	-.03	-.01	-.01	.00	-.02	.00	(.92)		
15. Income for Wants	3.57	0.93	.05*	.04	-.03	-.03	.02	-.02	.01	.00	.00	-.01	.02	.00	.02	.67**	(.79)	
16. Income for Needs	2.50	0.86	.02	-.01	.00	-.02	.01	.00	-.02	-.04	-.02	.02	-.03	-.02	-.02	.56**	.55**	(.82)

Notes.

**$p < .01$; *$p < .05$; *Cronbach's alpha* internal consistency estimate, in parentheses.

Table 5.

Descriptives & Bivariate Correlations for Individual Demographic & Financial Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	12
1. Age	46.53	13.91	--												
2. Gender	1.60	0.49	.15**	--											
3. Marital Status	0.49	0.50	-.29**	-.06**	--										
4. Number of Kids	1.67	1.04	.06**	.13**	-.31**	--									
5. Hours Worked	35.27	9.61	.34**	-.06**	-.20**	.06**	--								
6. Pay Rate	13.57	4.00	.44**	.00	-.24**	.09**	.64**	--							
7. Weekly Income	503.00	235.10	.41**	-.06**	-.21**	.08**	.88**	.91**	--						
8. Percent Family Income	6.71	3.23	.21**	-.03	.15**	.01	.47**	.37**	.44**	--					
9. Estimated Family Income	4.74	2.45	.15**	-.06**	-.45**	.11**	.27**	.41**	.40**	-.23**	--				
10. Weekly Family Income	636.69	289.48	.36**	-.02	-.37**	.08**	.76**	.81**	.88**	.03	.53**	--			
11. Financial Strain	3.49	0.98	-.10**	.06**	.04	.12**	-.06**	-.15**	-.13**	.13**	-.22**	-.19**	(.92)		
12. Income for Wants	3.57	0.93	-.08**	.12**	.02	.13**	-.08**	-.18**	-.16**	.13**	-.26**	-.23**	.67**	(.79)	
13. Income for Needs	2.50	0.86	-.14**	.11**	.15**	.09**	-.16**	-.26**	-.24**	.07**	-.35**	-.28**	.56**	.55**	(.82)

Notes.

**$p < .01$; *$p < .05$; *Cronbach's alpha* internal consistency estimate, in parentheses.

Table 6.

Descriptives & Bivariate Correlations for Group Mean Centered Individual Demographic & Financial Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	0.00	13.72	--												
2. Gender	0.00	0.48	.15**	--											
3. Marital Status	0.00	0.50	-.30**	-.06**	--										
4. Number of Kids	0.00	1.03	.07**	.14**	-.32**	--									
5. Hours Worked	0.00	9.47	.34**	-.05*	-.21**	.06**	--								
6. Pay Rate	0.00	3.91	.43**	.01	-.25**	.09**	.64**	--							
7. Weekly Income	0.00	230.91	.40**	-.05*	-.25**	.08**	.88**	.91**	--						
8. Percent Family Income	0.00	3.18	.20**	-.03	.15**	.01	.46**	.37**	.45**	--					
9. Estimated Family Income	0.00	2.41	.15**	-.06**	-.45**	.11**	.27**	.41**	.40**	-.23**	--				
10. Weekly Family Income	0.00	285.13	.35**	-.02	-.38**	.09**	.77**	.81**	.88**	.02	.54**	--			
11. Financial Strain	3.49	0.98	-.09**	.06**	0.03	.12**	-.05**	-.14**	-.12**	.13**	-.23**	-.18**	(.92)		
12. Income for Wants	3.57	0.93	-.08**	.12**	0.02	.13**	-.08**	-.17**	-.15**	.13**	-.27**	-.22**	.67**	(.79)	
13. Income for Needs	2.50	0.86	-.14**	.11**	.15**	.09**	-.15**	-.26**	-.23**	.07**	-.35**	-.27**	.56**	.55**	(.82)

Notes.

**$p < .01$; *$p < .05$; Cronbach*'s alpha* internal consistency estimate, in parentheses.

Table 7.

Descriptives & Bivariate Correlations for Individual Employment Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Union Health Ins. Status	0.18	0.38	--										
2. Not Eligible Health Ins.	0.06	0.25	.54**	--									
3. Union Health Insurance Cost	1.65	0.77	--	-.02	--								
4. Health Ins. From Family	0.08	0.27	.56**	.13**	.05*	--							
5. No Health Insurance	0.05	0.21	.35**	.26**	.00	-.06**	--						
6. Spouse Work Full Time	0.26	0.44	-.08**	-.09**	.32**	.07**	-.09**	--					
7. Spouse Retired	0.07	0.26	-.07**	-.02	.09**	-.01	-.03	-.16**	--				
8. Spouse Unemployed	0.04	0.20	-.05*	-.01	.13**	-.06**	.01	-.12**	-.03	--			
9. Financial Strain	3.49	0.98	.01	.02	.01	-.03	.06**	-.05*	-.06**	.09**	(.92)		
10. Income for Wants	3.57	0.93	.05*	.03	-.02	-.02	.08**	-.04	-.04*	.09**	.67**	(.79)	
11. Income for Needs	2.50	0.86	.11**	.09**	-.09**	.00	.12**	-.14**	-.07**	.06**	.56**	.55**	(.82)

Notes.

**$p < .01$; *$p < .05$; *Cronbach's alpha* internal consistency estimate, in parentheses.

Table 8.

Descriptives & Bivariate Correlations for Group Mean Centered Individual Employment Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Union Health Ins. Status	0.00	0.38	--										
2. Not Eligible Health Ins.	0.00	0.24	.53**	--									
3. Union Health Insurance Cost	0.00	0.76	.00	-.01	--								
4. Health Ins. From Family	0.00	0.27	.55**	.11**	.05*	--							
5. No Health Insurance	0.00	0.21	.35**	.25**	-.01	-.07**	--						
6. Spouse Work Full Time	0.00	0.43	-.08**	-.09**	.31**	.06**	-.09**	--					
7. Spouse Retired	0.00	0.26	-.07**	-.03	.09**	-.02	-.04	-.165**	--				
8. Spouse Unemployed	0.00	0.20	-.04*	-.01	.13**	-.06**	.01	-.125**	-.04	--			
9. Financial Strain	3.49	0.98	.01	.02	.01	-.04*	.06**	-.051*	-.06**	.09**	(.92)		
10. Income for Wants	3.57	0.93	.04*	.03	-.02	-.03	.08**	-0.03	-.04*	.09**	.67**	(.79)	
11. Income for Needs	2.50	0.86	.10**	.08**	-.09**	.00	.12**	-.14**	-.07**	.06**	.56**	.55**	(.82)

Notes.

**$p < .01$; *$p < .05$; *Cronbach's alpha* internal consistency estimate, in parentheses.

Table 9.

Confirmatory Factor Analysis Fit Indices and Model Comparisons

Model and Comparison	X^2	*df*	*CFI*	*SRMR*	*RMSEA*
Multilevel (Level 1 & Level 2) Model					
Four Factor	174.76*	53	.97	.15	.04
Group Mean Centered (Level 1) Model					
Two Factor	56.49*	4	.98	.03	.08

Notes.

*$p < .01$; *CFI* = Comparative Fit Index. *SRMR* = Standardized Root Mean Square Residual. *RMSEA* = Root Mean Square Error of Approximation.

Table 10.

Between-Level Factor Loadings for Multilevel CFA

Factor and Item	λ
Macroeconomic (L2) Employment Factor	
Food-stamp Recipient Rate	.98
Health Insurance – Medicaid Rate	.98
Health Insurance – Employer-Provided Rate	-.93
Unemployment Rate	.82
Macroeconomic (L2) Financial Factor	
Wage Income	.95
Investment Income	.71
Business Income	.68
1st Mortgage Payment	.94
Individual (L1) Employment Factor	
Work Hours	1.00
Health Insurance Status	.93
Individual (L1) Financial Factor	
Family Income	.86
Spousal Work Status	.83

Table 11.

Skewness and Intra-Class Correlations (ICC1) of Individual-level Economic Indicators

L1 Economic Indicator	Skewness Value	Skewness Std. Error	ICC1
Union Health Ins. Status	1.67	0.05	.03
Not Eligible Health Ins.	3.54	0.05	.01
Union Health Ins. Cost	0.69	0.06	.00
Health Ins. From Family	3.11	0.05	.02
No Health Ins.	4.38	0.05	.00
Spouse Works Full Time	1.09	0.05	.01
Spouse Retired	3.34	0.05	.00
Spouse Unemployed	4.47	0.05	.00
Organizational Tenure	0.64	0.05	.02
Hours Worked	-0.89	0.05	.02
Pay Rate	-0.48	0.05	.04
Weekly Income	-0.16	0.05	.02
Percent Family Income	-0.42	0.05	.02
Estimated Family Income	0.54	0.05	.02
Weekly Family Income	0.19	0.05	.02
Job Insecurity	0.35	0.05	.01
Financial Strain	-0.28	0.05	.00
Income for Wants	-0.34	0.05	.00
Income for Needs	0.38	0.05	.01

Table 12.

Factor Loadings & Internal Consistency Estimates for Two Single-Level CFAs

Subscale and Item	λ	α
Macroeconomic (L2) Employment Factor		.96
Food-stamp Recipient Rate	.98	
Health Insurance – Medicaid Rate	.98	
Health Insurance – Employer-Provided Rate	-.93	
Unemployment Rate	.82	
Macroeconomic (L2) Financial Factor		.91
Wage Income	.95	
Investment Income	.71	
Business Income	.68	
1st Mortgage Payment	.94	
Individual (L1) Employment Factor		.76
Work Hours	.83	
Health Insurance Status	.63	
Tenure	.69	
Individual (L1) Financial Factor		.66
Family Income	.96	
Spousal Work Status	.51	

Notes.

Level 1(L1) indicators were group-mean centered in order to control for between group (L2) variation.

Table 13.

Mixed Model Fixed Effects on Financial Strain

Variable	*B*	Std. Error	*df*	*t*
Intercept-only				
Intercept	3.49	.02	20.6	149.85*
One Factor				
Intercept	3.49	.02	20.1	159.58*
Employment Factor	-0.11	.03	24.2	-4.26*
Two Factor				
Intercept	3.49	.02	22.8	148.75*
Employment Factor	-0.07	.03	25.5	-2.66*
Finance Factor	-0.15	.03	24.0	-5.74*
Two Factor – Job Insecurity				
Intercept	3.49	.02	22.8	141.97*
Employment Factor	-0.07	.02	25.3	-2.94*
Finance Factor	-0.13	.03	24.0	-4.73*
Job Insecurity	0.29	.03	2429.8	11.45*

Notes.

*$p < .01$.

Table 14.

Mixed Model Fixed Effects on Perceived Income Inadequacy for Wants

Variable	*B*	Std. Error	*df*	*t*
Intercept-only				
Intercept	3.57	.02	22.4	176.31*
Objective Empl. Factor Model				
Intercept	3.57	.02	22.0	190.31*
Employment Factor	-0.15	.03	17.7	-5.79*
Objective Two Factor Model				
Intercept	3.57	.02	24.6	184.05*
Employment Factor	-0.11	.03	17.7	-4.24*
Finance Factor	-0.15	.02	2349.5	-6.85*
Objective – Subjective Model				
Intercept	3.57	.02	23.80	178.42*
Employment Factor	-0.11	.03	16.9	-4.44*
Finance Factor	-0.13	.02	2364.9	-6.15*
Job Insecurity	0.22	.02	2419.4	8.81*

Notes.

*$p < .01$.

Table 15.

Mixed Model Fixed Effects on Perceived Income Inadequacy for Needs

Variable	*B*	Std. Error	*df*	*t*
Intercept-only				
Intercept	2.50	0.02	23.0	107.34*
One Factor				
Intercept	2.50	0.02	21.4	119.80*
Employment Factor	-0.21	0.02	2413.1	-9.94*
Two Factor				
Intercept	2.50	0.02	20.6	121.66*
Employment Factor	-0.15	0.02	2398.3	-6.95*
Finance Factor	-0.23	0.02	2406.3	-11.92*
Two Factor – Job Insecurity				
Intercept	2.50	0.02	21.5	122.77*
Employment Factor	-0.15	0.02	2404.0	-7.39*
Finance Factor	-0.21	0.02	2408.4	-11.09*
Job Insecurity	0.27	0.02	2426.0	12.69*

Notes.

*$p < .01$.

Table 16.

Summary of Total Mixed Model Individual-level Effects on Perceptions of Economic Stress

Economic Strain Dimension	*Effect Size Estimate (2-Log Likelihood)*
Financial Strain	.07
Income Inadequacy for Wants	.07
Income Inadequacy for Needs	.15

Appendix C

Figure

	Objective	**Subjective**
Employment	***Employment Instability*** • unemployment & underemployment • downward mobility	***Employment Uncertainty*** • concern about layoff • concern about unemployment
Income	***Economic Deprivation*** • inability to meet financial needs • loss of income and financial resources	***Economic Strain*** • perceived financial adequacy • financial concerns and worries • change in financial situation

Voydanoff's (1990) Components of Economic Stress

REFERENCES

Angeles, G., Guilkey, D.K., & Mroz, T.A. (2005). The Impact of Community-Level Variables on Individual-Level Outcomes: Theoretical Results and Applications. *Sociological Methods Research, 34*, 76-121. doi:10.1177/0049124104273069

Armstrong-Stassen, M. (2004). The influence of prior commitment on the reactions of layoff survivors to organizational downsizing. *Journal of Occupational Health Psychology*, *9*(1), 46-60. doi:10.1037/1076-8998.9.1.46

Aron-Dine, A., & Shapiro, I. (March 29, 2007). Share of national income going to wages and salaries at record low in 2006. *Center on Budget and Policy Priorities*, Retrieved from: http://www.cbpp.org/cms/?fa=view&id=634

Ashford, S.J., Lee, C., & Bobko, P. (1989). Content, causes, and consequences of job insecurity: A theory-based measure and substantive test. *Academy of Management Journal, 32*(4), 803-829.

Associated Press. (2009). Economic Stress Index. Retrieved from http://hosted.ap.org/specials/interactives/_national/stress_index_premium/

Bailey, R.C., & Miller, C. (1998). Life satisfaction and life demands in college students. *Social Behavior and Personality, 26*(1), 51-56.

Bakker, A.B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology, 22*(3), 309-328.

Barling, J., Fullagar, C., & Kelloway, E.K. (1992). The union and its members: A psychological approach. Oxford University Press: New York.

Bauman, S. (2009). Group work in the economic downturn. *Journal for Specialists in Group Work, 34*(2), 97-100.

Beiser, M., Johnson, P., & Turner, R.J. Unemployment, underemployment and depressive affect among Southeast Asian refugees. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences, 23*(3), 731-743.

Bliese, P.D., & Jex, S.M. (2002). Incorporating a multilevel perspective into occupational stress research: Theoretical, methodological, and practical implication. *Journal of Occupational Health Psychology, 7*(3), 265–276.

Boyce, C.J., Brown, G.D.A., & Moore, S.C. (2010). Money and happiness: Rank of income, not income, affects life satisfaction. *Psychological Science, 21*(4), 471-475.

Brenner, M.H. (1973). *Mental illness and the economy*. Harvard University Press: London, England.

Brenner, M.H., & Mooney, A. (1983). Unemployment and health in the context of economic change. *Social Science & Medicine, 17*(16), 1125-1138.

Brown, G.W., & Harris, T. (1978). Social origins of depression: A reply. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences, 8*(4), 577-588.

Bryk, A.S., & Raudenbush, S.W. (1992). *Hierarchical linear models: Applications and data analysis methods*: *Advanced qualitative techniques in the social sciences, 1*, Sage: Thousand Oaks, CA.

Bureau of Labor Statistics (2009a). Employment situation summary: May 2009. *U.S. Department of Labor Economic News Release 09-0588*, Retrieved from http://www.bls.gov/news.release/empsit.nr0.htm

Bureau of Labor Statistics (2009b). Labor force statistics from the current population survey. Retrieved from http://www.bls.gov/cps/cps_htgm.htm#unemployed

Bureau of Labor Statistics (2009c). Mass layoffs summary: Extended mass layoffs in the first quarter of 2009. *U.S. Department of Labor Economic News Release, 09-0506*. Retrieved from http://www.bls.gov/news.release/mslo.nr0.htm

Bureau of Labor Statistics (2010a). Most requested statistics: Labor force statistics from the Current Population Survey. *U.S. Department of Labor*. Retrieved from http://data.bls.gov/cgi-bin/surveymost?ln

Bureau of Labor Statistics (2010b). A profile of the working poor, 2008. *U.S. Department of Labor, Report 1022*. Retrieved from http://www.bls.gov/cps/cpswp2008.pdf

Catalano, R., & Dooley, D. (1977). Economic predictors of depressed mood and stressful life events in a metropolitan community. *Journal of Health and Social Behavior, 18*(3), 292-307.

Catalano, R., & Dooley, D. (1983). Health effects of economic instability: A test of economic stress hypothesis. *Journal of Health and Social Behavior, 24*, 46-60.

Catalano, R., Dooley, D., & Jackson, R.L. (1985). Economic antecedents of help seeking: Reformulation of time-series tests. *Journal of Health and Social Behavior, 26*, 141-152.

Cheng, G.H.L., & Chan, D.K.S. (2008). Who suffers more from job insecurity? A meta-analytic review. *Applied Psychology: An International Review, 57*(2),. 272-303.

Clogg, C.C., Eliasor, S.R., & Wahl, R.J. (1990). Labor-market experiences and labor-force outcomes. *American Journal of Sociology, 95*(6), 1536-76.

Cobb, S., & Kasl, S. V. (1977). Termination: The consequences of job loss (NIOSH Publication No. 77–224). Washington, DC: U. S. Government Printing Office, Department of Health, Education, and Welfare.

Cohn, R.M. (1978). The effect of employment status change on self-attitudes. *Social Psychology, 41*(2), 81-93.

Conger, R.D., Conger, K.J., Elder, G.H., Lorenz, F.O., Simons, R.L., & Whitbeck, L.B. (1993). Family economic stress and adjustment of early adolescent girls. *Developmental Psychology, 29*(2), 206-219.

Conger, R.D., Elder, G.H., Lorenz, F.O., Conger, K.J., Simons, R.L., Whitbeck, L.B., Huck, S., Melby, J.N. (1990). Linking economic hardship to marital quality and instability. *Journal of Marriage & the Family, 52*(3), 643-656.

Creed, P.A., & Bartrum, D.A. (2008). Personal control as a mediator and moderator between life strains and psychological well-being in the unemployed, *Journal of Applied Social Psychology, 38*(2), 460-481.

Creed, P.A., & Evans, B. (2002). Personality, well-being and deprivation theory. *Personality and Individual Differences, 33,* 1045-1054.

De Jonge, J., & Kompier, M.A.J. (1997). A critical examination of the Demand-Control-Support Model from a work psychological perspective. *International Journal of Stress Management, 4*, 235-58.

De Witte, H. (1999). Job insecurity and psychological well-being: Review of the literature and exploration of some unresolved issues. *European Journal of Work and Organizational Psychology, 8*, 155–177.

De Witte, H. (2000). Work ethic and job insecurity: Measurement and consequences for well-being, satisfaction and performance. In R. Bouwen, K. De Witte, H. De Witte, & T. Taillieu (Eds.), *Van groep naar gemeenschap* (p. 325–350). Liber Amicorum.

Dekker, S.W.A., & Schaufeli, W.B. (1995). The effects of job insecurity on psychological health and withdrawal: A longitudinal study. *Australian Psychologist, 30*(1), 57-63.

Demerouti, E., Bakker, A.B., Nachreiner, F., & Schaufeli, W.B. (2001). The job demands-resources model of burnout", *Journal of Applied Psychology, 86*, 499-512.

DeNavas-Walt, Proctor, B.D., & Smith, J.C. (2009). Income, Poverty, and Health Insurance Coverage in the United States: 2008. *U.S. Census Bureau, Current Population Reports, P60-236*, U.S. Government Printing Office: Washington, DC.

Dohrenwend, B.P., Link, B.G., Kern, R., Shrout, P., et al., (1990). Measuring life events: The problem of variability within event categories. *Stress Medicine, 6*(3), Special issue: II–IV. Advances in measuring life stress, 179-187.

Dooley, D., & Catalano, R. (1984). The epidemiology of economic stress. *American Journal of Community Psychology, 12*(4), 387-409.

Dooley, D., & Catalano, R. (1988). Recent research on the psychological effects of unemployment. *Journal of Social Issues, 44*(4), 1-12.

Dooley, D., & Catalano, R. (2000). Group interventions and the limits of behavioral medicine. *Behavioral Medicine, 26,* 116–128.

Dooley, D., Catalano, R., & Brownell, A. (1986). The relation of economic conditions, social support, and life events to depression. *Journal of Community Psychology, 14*, 103-119.

Dooley, D., Catalano, R., & Rook, K. (1988). Personal and aggregate unemployment and psychological symptoms. *Journal of Social Issues, 44*(4), 107-123.

Dooley, D., Catalano, R., Rook, K., & Serxner, S. (1989). Economic stress and suicide: Multilevel analyses: I. Aggregate time-series analyses of economic stress and suicide. *Suicide and Life-Threatening Behavior, 19*(4), 321-336.

Dooley, D., & Prause, J. (2002). Mental health and welfare transitions: Depression and alcohol abuse in AFDC women. *American Journal of Community Psychology, 30*, 787–813.

Dooley, D., & Prause, J. (2004). *The social costs of underemployment*. New York: Cambridge University Press.

Dooley, D., Prause, J., & Ham-Rowbottom, K. (2000). Unemployment and depression: Longitudinal relationships. *Journal of Health and Social Behavior, 41*, 421–436.

Dooley, D., Rook, K., & Catalano, R. (1987). Job and non-job stressors and their moderators. *Journal of Occupational Psychology, 60*, 115–132.

Doty, D.H., & Glick, W.H. (1998). Common method bias: Does common method variance really bias results? *Organizational Research Methods, 1*(4), 374-406.

Economic Policy Institute. (2003). Labor market left behind. *EPI Briefing Paper, 142*. Retrieved from http://www.epi.org/publications/entry/briefingpapers_bp142/

Elder, G.H., & Caspi, A. (1988). Economic stress in lives: Developmental perspectives. *Journal of Social Issues, 44*(4), 25-45.

Feldman, D.C. (1996). The nature, antecedents, and consequences of underemployment. *Journal of Management, 22*, 385-407.

Fenwick, R., & Tausig, M. (1994). The macroeconomic context of job stress. *Journal of Health and Social Behavior, 35,* 266-282.

Ferrie, J. E., Shipley, M. J., Marmot, M. G., Martikainen, P., Stansfeld, S. A., & Smith, G. D. (2001). Job insecurity in white-collar workers: Toward an explanation of association with health. *Journal of Occupational Health Psychology, 6*(1), 26-42. doi:10.1037/1076-8998.6.1.26

George, J., & Brief, A. (1990). The economic instrumentality of work: An examination of the moderating effects of financial requirements and sex on the pay-life satisfaction relationship. *Journal of Vocational Behavior, 37*, 357-368.

Glazer, S., & Beehr, T.A. (2005). Consistency of implications of three role stressors across four countries. *Journal of Organizational Behavior, 26*(5), 467-487.

Gore, S. (1978). The effect of social support in moderating the health consequences of unemployment. *Journal of Health and Social Behavior, 19*, 157-165.

Greenhouse, S., & Leonhardt, D. (August 28, 2006). Real wages fail to match a rise in productivity. *New York Times*, A1.

Greenhouse, S. (2008). *The big squeeze: Tough times for the American worker*. Knopf: New York.

Hacker, J. S. (2004). Privatizing risk without privatizing the welfare state: The hidden politics of social policy retrenchment in the United States. *American Political Science Review, 98*, 243–260.

Hacker, J. S. (2006). The great risk shift: The assault on American jobs, families, health care, and retirement and how you can fight back. New York: Oxford University Press.

Hanisch, K. (1999). Job loss and unemployment research from 1994 to 1998: A review and recommendations for research and intervention. *Journal of Vocational Behavior, 55*, 188-220.

Hart, P.M., & Cooper, C.L. (2002). Occupational stress: Toward a more integrated framework. In Anderson, N., Ones, D.S., Sinangil, H.K., & Viswesvaran, C. (Eds.), *Handbook of industrial, work and organizational psychology, Volume 2: Organizational psychology*. (p. 93-114), Sage: Thousand Oaks, CA.

Hastie, R., & Dawes, R.M. (2001). *Rational choice in an uncertain world: The psychology of judgment and decision making*. Sage: Thousand Oaks, CA.

Haugen, S.E. (2009). Measures of labor underutilization from the current population survey. U.S. Department of Labor, *U.S. BLS Working Paper, 424*.

Heymann, J., Boynton-Jarrett, R., Carter, P., Bond, J.T., & Gallinsky, E. (2002). Work-family issues and low-income families: Making work pay in the low-income labor market. Retrieved from http://www.economythatworks.com/PDFs/ford_analysisfinal.pdf

Hoard, L.R., & Anderson, E.A. (2004). Factors related to depression in rural and urban noncustodial, low-income fathers. *Journal of Community Psychology, 32*(1), p. 103-119.

Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.

Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review, 50*(3), 337-421.

Hobfoll, S.E., & London, P. (1986). The relationship of self-concept and social support to emotional distress among women during war. *Journal of Social and Clinical Psychology*, *4*(2), 189-203.

Hobfoll, S.E., & Shirom, A. (2001). Conservation of Resources Theory: Applications to stress and management in the workplace. (p. 57-80), In Golembiewski, R.T. (Ed.), *Handbook of Organizational Behavior*, Dekker: New York.

Howe, G.W., Levy, M.L., & Caplan, R.D. (2004). Job loss and depressive symptoms in couples: Common stressors, stress transmission, or relationship disruption? *Journal of Family Psychology, 18*(4), 639-650.

Integrated Public Use Microdata Series CPS. (n.d.) IPUMS Current Population Survey, Minnesota Population Center, University of Minnesota. Retrieved from http://cps.ipums.org/cps/

Integrated Public Use Microdata Series USA. (n.d.) IPUMS USA, Minnesota Population Center, University of Minnesota. Retrieved from http://usa.ipums.org/usa/

Jackson, P.R., & Warr, P.B. (1984). Unemployment and psychological ill-health: The moderating role of duration and age. *Psychological Medicine, 14*, 605–614.

Kahn, J.R., & Pearlin, L.I. (2006). Financial strain over the life course and health among older adults. *Journal of Health and Social Behavior, 47*(1), 17-31.

Kahneman, D., & Tversky, A. (1990). Prospect theory: An analysis of decision under risk. In Moser, P.K. (Ed.), *Rationality in action: Contemporary approaches*. (p. 140-170), Cambridge University Press: New York.

Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: implications for job design. *Administrative Science Quarterly, 24*, 285-308.

Karasek, R., & Theorell, T. (1990). Healthy work: Stress, productivity, and the reconstruction of working life. Basic Books: New York.

Kessler. R.C., Turner, J.B., & House, J.S. (1987) Intervening processes in the relationship between unemployment and health. *Psychological Medicine, 17*, 949-961.

Kessler R.C., Turner, J.B., & House, J.S. (1989). Unemployment, reemployment, and emotional functioning in a community sample. *American Sociological Review, 54*, 648-657.

Kreft, I., & De Leeuw, J. (1998). Introducing multilevel modeling. Sage: London.

Krugman, P. (July 14, 2006). Left behind economics. *New York Times*, A19.

Kuhnert, K.W., & Vance, R.J. (1992). Job insecurity and moderators of the relation between job insecurity and employee adjustment. In, Quick, J.C., Murphy, L.R., & Hurrell, J.J. (Eds.) *Stress & well-being at work: Assessments and interventions for occupational mental health.* (p. 48-63), American Psychological Association: Washington, DC.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer: New York.

Li, Y., Aranda, M.P., & Chi, I. (2007). Health and life satisfaction of ethnic minority older adults in mainland China: Effects of financial strain. *The International Journal of Aging & Human Development, 64*(4), 361-379.

Luthans, B.C., & Sommer, S.M. (1999). The impact of downsizing on workplace attitudes: Differing reactions of managers and staff in a health care organization. *Group & Organization Management, 24*(1), 46-70.

Lyons, A.C. (2004). A profile of financially at-risk college students. *Journal of Consumer Affairs, 38*(1), 56-80.

Martikainen, P., Adda, J., Ferrie, J. E., Smith, G., Davey, & Marmot, M. (2003). Effects of income and wealth on GHQ depression and poor self rated health in white collar women and men in the Whitehall II study. *Journal of Epidemiology and Community Health, 57*, 718–723.

McKee-Ryan, F., Song, Z., Wanberg, C., & Kinicki, A. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology, 90*, 53-76.

Muthen, B.O. (1997). Latent variable modeling of longitudinal and multilevel data. In A.E. Raferty (Ed.), *Sociological Methodology, 1997*, (p. 267-316), Washington, D.C.: American Sociological Association.

Pearlin, L.I. (1989). The sociological study of stress. *Journal of Health and Social Behavior, 30*(3), 241-256.

Pearlin, L.I. (1999). The stress process revisited: Reflections on concepts and their interrelationships. In Aneshensel, C.S., & Phelan, J.C., *Handbook of the Sociology of Mental Health*, (p. 395–416) Plenum: New York.

Pearlin, L.I., Menaghan, E.G., Lieberman, M.A., & Mullan, J.T. (1981). *Journal of Health and Social Behavior, 22*(4), p. 337-356.

Perrucci, C.C. (1994). Economic strain, family structure and problems with children among displaced workers. *Journal of Sociology and Social Welfare, 21*(3), 79-91.

Platt, S., & Kreitman, N. (1985). Parasuicide and unemployment among men in Edinburgh 1968–1982. *Psychological Medicine, 15*, 113–123.

Prause, J., Dooley, D., & Huh, J. (2009). Income volatility and psychological depression. *American Journal of Community Psychology, 43*(1-2), Mar, 2009. pp. 57-70.

Probst, T. M. (2003). Development and validation of the job security index and the job security satisfaction scale: A classical test theory and IRT approach. *Journal of Occupational and Organizational Psychology, 76*(4), 451-467. doi:10.1348/096317903322591587

Probst, T .M. (2005). Economic stressors. In Barling, J., Kelloway, K., & Frone, M. (Eds.). *Handbook of Work Stress*, (p. 267-297). Sage, Thousand Oaks, CA.

Probst, T. M., & Lawler, J. (2006). Cultural values as moderators of employee reactions to job insecurity: The role of individualism and collectivism. *Applied Psychology: An International Review, 55*(2), 234-254. doi:10.1111/j.1464-0597.2006.00239.x

Probst, T. M., Stewart, S. M., Gruys, M. L., & Tierney, B. W. (2007). Productivity, counterproductivity and creativity: The ups and downs of job insecurity. *Journal of Occupational & Organizational Psychology, 80*(3), 479-497. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=pbh&AN=26978344&site=ehost-live

Reynolds, J.R. (1997). The Effects of Industrial Employment Conditions on Job-Related Distress. *Journal of Health and Social Behavior, 38,* 105-116.

Robert, S.A. (1998). Community-level socioeconomic status effects on adult health. *Journal of Health and Social Behavior, 39,* 18-37.

Robinson, W.S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review, 15,* 352-357.

Roskies, E., Louis-Guerin, C., & Fournier, C. (1993). Coping with job insecurity: How does personality make a difference? *Journal of Organizational Behavior, 14*(7), 617-630. doi:10.1002/job.4030140702

Ruggles, S., Alexander J.T., Genadek, K., Goeken, R., Schroeder, M.B., & Sobek, M. (2010). *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.

Santerre, R.E. (December 1, 2003). The State of Health Care, in One Easy Number. *New York Times*, Retrieved from: http://www.nytimes.com/2003/12/01/opinion/the-state-of-health-care-in-one-easy-number.html

Schmidt, S. R. (1999). Long-run trends in workers' beliefs about their own job security: Evidence from the general social survey. *Journal of Labor Economics, 17*(4, pt 2), S127–S141.

Schoen, C., Nicholson, J.L., & Rustgi, S.D. (2009). Paying the price: How health insurance premiums are eating up middle-class incomes: State health insurance premium trends and the potential of national reform. *The Commonwealth Fund, Publication 1313, 17*, 1-24.

Sears, L.E. (2008). Work-related outcomes of financial stress: Relating perceived income adequacy and financial strain to job performance and worker well-being. Unpublished Thesis, Portland State University, Psychology Department.

Shek, D.T.L., (2005). Economic Stress, Emotional Quality of Life, and Problem Behavior in Chinese Adolescents with and without Economic Disadvantage. *Social Indicators Research, 71*(1), 363-383.

Silla, I., De Cuyper, N., Gracia, F.J., Peiro, J.M., & De Witte, H. (2009). Job insecurity and well-being: Moderation by employability. *Journal of Happiness Studies, 10*(6), 739-751.

Shonkwiler, J.S., & Moss, C.B. (1993). A multidimensional index of financial stress in the farm sector. *Social Indicators Research, 29*(3), 307-316.

Simons, R., Lorenz, F., Conger, R., & Wu, C. (1992). Support from spouse as mediator and moderator of the disruptive influence of economic strain on parenting. *Child Development, 63,* 1282-1301.

Sinclair, R.R. (2010). Money, models, and mental health: Implications of economic stress for occupational health psychology. Keynote Address. European Academy of Occupational Health Psychology Annual Conference, Rome, Italy.

Sinclair, R.R., Hannigan, M.A., & Tetrick, L.E. (1995). Benefit coverage and employee attitudes: A social exchange perspective. In L.E. Tetrick & J. Barling (Eds.*) Changing employment relations: Behavioral and social perspectives*. (p. 163-185), Washington DC: APA Books.

Sinclair, R.R., Leo, M. C., Wright, C. (2005). Benefit system effects on employees' benefit knowledge, use, and organizational commitment. *Journal of Business and Psychology, 20*(1), 3-29.

Sinclair, R.R., & Martin, J.E. (2006). *Examining some assumptions about lower income entry-level workers.* Paper presented at the annual conference of the Society for Industrial and Organizational Psychology, Dallas, TX.

Sinclair, R.R., Sears, L.E., Probst, T., & Zajack, M. (2010). A multilevel model of stress and employee well-being. In Houdmont, J., & Leka, S. (Eds.) *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice, Vol. 1,* (p. 1-20). Wiley & Sons: Chichester, England.

Sorrentino, C. (1993). International comparisons of unemployment indicators. *Monthly Labor Review, March 1993,* 3-24.

Sorrentino, C. (1995). International unemployment indicators, 1983-93. *Monthly Labor Review, August 1995,* 31-50.

Spera, S.P., Buhrfeind, E.D., & Pennebaker, J.W. (1994). Expressive writing and coping with job loss. *Academy of Management Journal, 37*(3), 722-733.

Storseth, F. (2006). Changes at work and employee reactions: Organizational elements, job insecurity, and short-term stress as predictors for employee health and safety. *Scandinavian Journal of Psychology*, *47*(6), 541-550.

Strazdins, L., D'Souza, R. M., L.-Y. Lim, L., Broom, D. H., & Rodgers, B. (2004). Job strain, job insecurity, and health: Rethinking the relationship. *Journal of Occupational Health Psychology, 9*(4), 296-305. doi:10.1037/1076-8998.9.4.296

Sverke, M., & Hellgren, J. (2002). The nature of job insecurity: Understanding employment uncertainty on the brink of a new millennium. *Applied Psychology: An International Review, 51*, 23–42.

Sverke, M., Hellgren, J., Naswall, K. (2002). No security: A meta-analysis and review of job insecurity and its consequences. *Journal of Occupational Health Psychology, 7*(3), 242-264.

Tausig, M., & Fenwick, R. (1999). Recession and well-being. *Journal of Health and Social Behavior, 40,* 1-16.

Tucker, J. S., Sinclair, R. R., & Thomas, J. L. (2005). The multilevel effects of occupational stressors on soldiers' well-being, organizational attachment, and readiness. *Journal of Occupational Health Psychology, 10*(3), 276-299.

Turner, J.B. (1995). Economic context and the health effects of unemployment. *Journal of Health and Social Behavior, 36*(3), 213-229.

United States Census Bureau. (2010). About the American Community Survey (ACS). Retrieved from http://www.census.gov/acs/www/

United States Census Bureau. (2008). *2006* ACS Content Test. Retrieved from http://www.census.gov/acs/www/AdvMeth/content_test/content_test_06.htm

Van der Doef, M., & Maes, S. (1999). The Job Demand-Control(-Support) Model and psychological well being: a review of 20 years of empirical research. *Work and Stress, 13*, 87-114.

Voydanoff, P. (1984). Economic distress and families: Policy issues. *Journal of Family Issues, 5*, 273-288.

Voydanoff, P. (1987). *Work and family life*. Sage: Newbury Park, CA.

Voydanoff, P. (1990). Economic distress and family relations: A review of the eighties. *Journal of Marriage and the Family, 52*, 1099-1115.

Wessel, D. (May 6, 2010). Meet the unemployable man, long in the making. *The Wall Street Journal Europe*, p. 11, Retrieved from http://online.wsj.com/article/SB40001424052748703322204575226003417489846.html#articleTabs%3Darticle

Whelan, C.T. (1992). The role of income, life-style deprivation and financial strain in mediating the impact of unemployment on psychological distress: Evidence from the Republic of Ireland. *Journal of Occupational and Organizational Psychology, 65*(4), Special issue: Marienthal and Beyond: 20th century research on employment and mental health, 331-344.

Whelan, C.T., & Maitre, B. (2007). Income, deprivation and economic stress in the enlarged European Union. *Social Indicators Research, 83*(2), 309-329.

Williams, M.L. (1995). Antecedents of employee benefit level satisfaction: A test of a model. *Journal of Management, 21*, 1097-1128.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70*(1), 115-126. doi:10.1037/0022-3514.70.1.115

Zvonkovic, A.M. (1988). Underemployment: Individual and marital adjustment to income loss. *Lifestyles, 9*, 161-178.